E. F. Wilkins

THE

HOME HAND-BOOK

OF

DOMESTIC HYGIENE

AND

RATIONAL MEDICINE.

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DISEASES AND THEIR TREATMENT.

The definition of disease we have elsewhere given as being a derangement of the structure or functions of the body. Strictly speaking, any degree of derangement is a diseased condition, although such states are not usually called disease unless the departure from the condition of health is so great as to occasion considerable inconvenience in the way of suffering or danger to life. All modern physiologists agree in this view, although a large share of medical works still retain forms of expression which embody erroneous ideas of disease. In common parlance the term disease is often applied to conditions which are merely symptoms, as dropsy, vomiting, etc., and for the convenience of the reader we shall in this work consider symptoms of this sort in the usual manner; since they require special treatment, and are often the most prominent manifestation of the morbid conditions by which they are produced.

Although there are a great number of individual diseases and morbid conditions, 1,147 different diseases and injuries to which the human body is liable being enumerated in the list prepared by the Royal College of Physicians of London, a careful study of all these different morbid states reveals the fact that the same principle holds good in reference to diseases as in reference to the various organs and numerous parts of the body; namely, that while there are a great variety of individual forms, there are in fact but a very few primary morbid conditions. The nature of these primary diseases or morbid conditions is by no means so well known as is the minute structure of the anatomical elements of the body, and yet sufficient is known to enable us to greatly simplify our ideas of the nature and proper treatment of disease through an understanding of its simplest elements. In order to give the intelligent reader a better idea of the nature of disease in general, we will briefly consider, before passing to a description of individual diseases, what has been termed the constituent elements of disease or constituent diseases under the two heads, structural derangements and functional derangements.

STRUCTURAL DERANGEMENTS.

It may well be doubted whether there can be any distinct manifestation of disease without a greater or lesser degree of derangement of the structure of organic parts, since function is wholly dependent on structure. For the sake of convenience, we may consider as structural derangements such diseased conditions as involve changes in the tissues of the body to such an extent as to render them perceptible by the senses. Under this head we will first notice—

Morbid Conditions of the Blood and Other Fluids.—Changes in the blood are not usually considered as organic or structural in character; but, as we have previously seen, the blood is really a fluid tissue, and changes in it embody more or less modification of the character of its constituent elements, as do changes in solid parts. Hence, it appears to us to be perfectly proper to class under this head morbid conditions of this sort. Diseased conditions of the blood are produced in a variety of ways. Perhaps the most frequent means by which the blood becomes diseased is by a retention of the waste products, or excrementitious elements, of the system, which are naturally eliminated as rapidly as produced. The nature of these various elements we have already elsewhere explained (see pp. 300–315), and so need only remark that the most important are the following: *Uric acid*, or *urea*, a poisonous element eliminated by the kidneys; *cholesterine*, and other poisonous elements of the bile, eliminated by the liver; *carbonic acid*, eliminated by the lungs; and a variety of poisonous elements eliminated by the skin and by the mucous membrane of the alimentary canal. When the function of any one of these great outlets of the system is suspended, the poisonous elements which it is designed to remove accumulate in the vital fluid, and occasion symptoms of poisoning to a greater or lesser degree. This morbid condition is present in a large share of all general diseases, and is, indeed, one of the most common predisposing causes of disease. The blood may also become diseased by the absorption of poisons from without, as by the reception of poisonous gases, disease germs, and poisonous substances in solution in drinking-water, or taken in conjunction with the food. It is also through the blood that the morbid elements of contagious diseases penetrate the system.

Another mode by which the blood becomes diseased is by a change in the proportion of its constituent elements, by which it becomes unable

to perform its functions properly. These changes may consist in an increase or decrease in the proportion of fibrine, of albumen, of water, of salts, of the white globules, or of the red corpuscles. Each of the changes indicated is attended by its particular class of symptoms. When fibrine becomes too abundant, the blood is likely to coagulate in the vessels, forming clots. When it is deficient, the fluidity of the blood becomes so great that severe hemorrhage may result from a very slight wound, or the blood may even ooze through the thin coverings in certain parts of the body, particularly the mucous membrane of the lungs. Deficiency of albumen renders the blood inefficient to support the nutritive processes of the body. When it is too abundant in consequence of overfeeding, the blood becomes too highly charged with nutritive elements, producing feverishness, and even inflammation. This is known as *plethora*, the opposite of which is *anemia*. When the fluid portion of the blood is too abundant, as it may become from drinking excessive quantities of fluids, injury may be occasioned by the excessive fullness of the blood-vessels. In the opposite condition the blood becomes thick, and is circulated with difficulty. A deficiency in the number of red corpuscles, a condition usual in debility and deficient nutrition, is usually accompanied with deficient oxygenation of the blood, a function which is chiefly performed by the red corpuscles. This condition is one of the characteristics of anemia. An excessive proportion of white blood corpuscles is also attended by serious interference with the vital functions.

In consequence of these changes in the blood, morbid conditions are produced in all the other fluids, whether secretions or excretions. If the blood contains retained or absorbed poisons, every fluid secretion and excretion will be contaminated with the same. If it is deficient in nutritive elements, the various vital fluids essential to the maintenance of life will also be deficient in the particular elements by which they are characterized, which are derived from the blood. And not only the fluids, but also the solids of the body, must be affected by changes in the blood, since the solids are all produced from the blood.

Diseased Conditions of the Solid Structures of the Body.—The diseased conditions of the solid structures of the body, which are readily appreciable by the senses, are of two classes: First, those which are due to mechanical and chemical causes; and, second, those which result from abnormal vital action. The latter class may not be in the

strictest sense primary diseased conditions, as little is known of the morbid vital action from which they result, but they may, for the present, be so considered.

Under the first head may be included all kinds of surgical accidents, bruises, fractures, etc.; injuries from chemical agents, as burns, injuries from caustics, or from irritating and corroding gases; the effects of gravitation, as in congestion of the lungs resulting from the accumulation of blood in the lower part in certain weak states of the system when the patient lies continually on the back; the production of varicose veins in the lower extremities from long standing or walking; the effects of mechanical obstruction to the circulation, as from wearing garters, and tight-lacing, also from the pressure on the blood-vessels of enlarged glands and tumors of various sorts; the results of obstruction of the ducts of glands, as in obstruction of the biliary ducts; the results of interference with respiration, occasioned by mechanical obstruction of the trachea or œsophagus, or from pressure on the chest by tight-lacing, or malposition of the body.

Under the second class, that is, structural derangements due to abnormal vital action of various parts of the body, we may mention the following: Changes in the size of the organs, changes in their consistency, exudations, transudations, degenerations, morbid growths. On account of the narrow limits of our space, we can delay but briefly on these various morbid changes, which of themselves furnish material for many large volumes. We must, however, hastily glance at a few of the most important. The changes in size of the organs are, of course, but two,—increase and diminution. Increase in size is termed *hypertrophy*. It is said to be either true or false, as the increase in size is due to the actual increased growth of the proper tissue of the organ, or to a mere expansion of volume without any actual increased growth of the tissue; as, for example, in hypertrophy of the heart we have sometimes an increase of size due to the increased growth of the heart's muscle, and at other times we have an increase in the size which is due to simple dilatation of its cavities and thinning of its walls without any actual increase in substance. In the majority of cases it happens that both forms of hypertrophy are present at once. Diminution in size is known as *atrophy*. In true atrophy there is a decrease in proper tissue. This may be accompanied either with an increase or decrease of size, since in some cases in which loss of proper tissue occurs, there is at the same time a great increase of size

from the deposit of abnormal or adventitious tissue, the latter process being, in fact, in many cases the real cause of the atrophy.

Changes in consistency consist of hardening or softening. These changes may take place either with or without inflammation.

Certain fluids, when thrown out into the cavities of the body, or deposited in the interstitial spaces of the tissues, become solid or semi-solid. These are termed *exudations*, in contradistinction from fluids, which, thrown out or deposited in this manner, remain in a fluid state, and are termed *transudations*. Exudation is a very common result of inflammation. Another solid or semi-solid deposit, which may be called an exudation, is tubercle, a characteristic product of consumption, or tuberculosis. Tubercles are said to be of two kinds,—the small gray tubercle, and larger yellowish masses of a cheesy consistency, called yellow tubercle.

There has been much discussion among pathologists as to which is the true tubercle. Probably the most correct view is that the two are simply different stages of the same morbid product, the gray tubercle after a time being converted into a yellow tubercle. More will be said on this subject in connection with the description of consumption. The peculiar deposit which takes place in a scrofulous enlargement of the glands, somewhat resembling tubercle, is also an exudation. Transudations give rise to dropsy or chlorosis, the former when the fluid collects within the closed cavities, the latter when the escaping fluid is discharged from the body.

Degenerations and morbid growths of various sorts are changes in the structure of organs resulting from mal-nutrition, which is probably due to a depressed condition of the vitality of the parts in which these changes occur. Under the head of degenerations is included what is known as fatty degeneration, in which the normal tissue of a part is changed to fat, as in fatty degenerations in the nervous system or in the muscular tissue of the liver, kidneys, heart-walls, blood-vessels, and, in fact, almost all the organs of the body. In some cases the proper tissue is absorbed, and a chalk deposit made in its place. This is known as calcareous degeneration, and frequently succeeds fatty degeneration. A peculiar form of degeneration of the liver, kidneys, and spleen, has been observed, in which the normal tissue of these organs resembles wax. This is known as waxy or lardaceous degeneration. Under the head of morbid growths are included various forms of cancer, fibrous tumors, and allied growths of a morbid character.

FUNCTIONAL DERANGEMENTS.

Functional derangements of a primary character may be enumerated as irritation, inflammation, congestion, depression, and fever.

Irritation is a condition in which there is an abnormally increased activity in a part, due to morbid excitation caused by some abnormal influence, mechanical, chemical, or physical.

Congestion is a condition of a part or organ in which the small blood-vessels contain an unnatural quantity of blood. There are two forms, active and passive. In active congestion there is abnormal activity of the circulation, which is the result of irritation or unnatural excitement of the vital activities of a part. In passive congestion there is no increase in the amount of blood circulating through the part. In fact, the amount of blood actually passing through its blood-vessels may be diminished. The condition is one in which from some obstruction to the circulation the venous blood does not pass onward as rapidly as it should, and hence accumulates. The accumulation may be the result of mechanical obstruction of the circulation or deficiency in the vital activity of the tissues. Passive congestion is always accompanied with a depressed condition of the affected part. The results of congestion depend on the nature of the organ affected. Whether active or passive, it always causes a decided disturbance of the functions of the part. If a secreting or excreting organ is affected, the natural product may be increased or diminished according to the intensity and character of the congestion. Congestion, both active and passive, is often accompanied with pain. The pain of active congestion is much more acute than that of passive congestion. Active congestion is of short duration, as if long continued it passes into inflammation or passive congestion.

Inflammation is a morbid condition, the symptoms of which are usually described as being heat, pain, redness, and swelling. It should be mentioned, however, that the symptoms given are not the real disease. Inflammation itself is undoubtedly only an advanced stage of the condition before described as irritation. When irritation becomes intense or is sufficiently long continued, certain changes in the tissues occur which are recognized as inflammation. One of the first and most characteristic symptoms is an increase in the number of white blood corpuscles in the part subject to the morbid process. The heat, pain, redness, and swelling are for the most part due to the

increased blood supply, although no doubt a portion of the increased amount of heat is caused by the abnormal activity of the tissues of the diseased part. The results of inflammation, like those of depression, depend in some degree upon the part affected. As we shall mention in particular the inflammation of various parts of the body, we need not dwell further upon the subject here.

Depression, either local or general, is a condition in which there is deficient vital activity. It may be the result of a deficient supply of the natural agents upon which the system depends for support, as heat, light, electricity, food, and pure air, or it may be the result of too intense and prolonged activity, or the influence of some noxious agent upon the system, as powerful poisons. It is always present in anemia and all forms of debility. It is probable also that various degenerations previously described, and probably also morbid growths, as well as tubercles, are due to depression, since it is observed that these morbid conditions almost universally occur in connection with conditions of general or local debility.

Fever is a morbid process somewhat difficult to describe. It is perhaps hardly primary in character, since it may include all the other functional derangements mentioned. Fever is always characterized by an elevation of temperature, a change in the frequency and force of the pulse, and a disturbance in greater or lesser degree of the functions of every organ of the body. The various minor symptoms of fever will be noticed elsewhere, and the peculiar characteristics of the various individual fevers will be given in connection with their description.

CAUSES OF DISEASE.

In preceding portions of this work we have dwelt so fully upon the relations of air, water, food, heat, light, electricity, and various other external agents, together with the influence of habits, to the human system in health and disease, that for our present purpose we have only to summarize the foregoing statements. The principal causes of disease may be classified as follows:—

1. Abnormal conditions of the surroundings or of the relations of external agents to the human body. This class, of course, will include all errors and abnormal conditions pointed out under the head of hygiene of food and diet, hygiene of the air, and the relations of heat, light, and electricity to the body.

2. Injurious habits, which may be made to include some of the preceding, though the term is here used with particular reference to the abnormal use of various organs of the body, as excessive or deficient exercise of the nervous system, muscles, or of other parts of the body, deficient mastication of food, etc.

3. Accidents. This class may in one sense be considered as included under the first, but the term is here employed in the ordinary sense, it being intended to include in this class all kinds of surgical accidents and injuries.

In many cases, poisons in the blood, arising either from retained excretions or by absorption from without, are the source of disease; but cases of this sort are so manifestly a result of the operation of the causes mentioned in the preceding classes that they cannot be mentioned as a separate class.

As samples of the foregoing, we call especial attention to the fact that disease may be produced by excess or deficiency of heat, cold, food, drink, light, or electricity, a supply of all of which, in proper quantity, is essential to the maintenance of health. We may also call attention to the fact that among the most frequent causes of serious and often fatal diseases, are impurities in the air, in the shape of noxious gases, dust, miasmatic poisons, and the germs of infectious and contagious diseases, and probably also certain peculiar elements, the nature of which is not certainly known, but which give rise to epidemics, sometimes local in character, but often spreading over a whole continent. The foregoing are what are generally known as the *exciting causes* of disease. Any one of the causes mentioned may, under certain circumstances, be a predisposing cause of disease. We will now call attention to what may be most properly denominated—

Predisposing Causes of Disease.—As just remarked, any one of the causes or the classes of causes already mentioned may produce a condition of the system predisposing it to disease; but the causes which may, under all circumstances, act as predisposing causes, and are never other than predisposing in character, are those which arise from temperament, sex, age, idiosyncrasy, hereditary tendencies, climate, occupation, modes of life, etc. Of the various predisposing causes mentioned, probably the most powerful and inveterate in its tendency of all is heredity. The actual transmission of disease by heredity occurs only in very exceptional instances. The majority of cases of so-called inheritance of disease are simply cases in which the tendency or predisposition to dis-

ease has been inherited, the nature of which is simply a weakness or deficiency of vitality on the part of some portion of the organism.

SYMPTOMS OF DISEASE.

We have not space here to enter upon a lengthy consideration of the classes of symptoms by which disease is characterized; and it is unnecessary to do so, as we have provided in the concluding portion of this work an ample and thoroughly classified index of symptoms, by reference to which the identification of diseases will be greatly facilitated and in ordinary cases rendered easy, even for those who are wholly unversed in medical technicalities. It should be remarked, however, that symptoms are the language of disease. In health, all the various vital processes are performed easily and regularly, and some of the more important, as the circulation of the blood, digestion, assimilation, and excretion, are performed unconsciously. Whenever the performance of the function of an organ which does its work unperceived by the senses during health becomes sensible, even though scarcely perceptible, we have one of the first evidences of disease. In order to understand the significance and importance of the various symptoms of disease, it is necessary that we should be familiar with the functions, structure, and appearance of the various parts of the body during health; hence the importance of a knowledge of anatomy and physiology in relation to the study of the treatment of disease. The language of health has already been well considered in the sections devoted to physiology. The language of disease, or symptomology, as it relates to the various classes of disease and individual diseases, will be explained in connection with the description of various classes of morbid conditions and individual diseases which will follow.

DIAGNOSIS.

Diagnosis is simply ascertaining the nature of a morbid condition or disease under which a person may be suffering, by an examination of the symptoms present in the case. Diagnosis is by far the most difficult part of the practice of medicine. It is in this department chiefly that medicine derives great advantages from the collateral sciences, and it is chiefly in its relations to diagnosis that medicine may itself lay claim to being a science. The practice of medicine is certainly nothing more than an art, and a not very highly developed art at that. In difficult cases, the process of diagnosis requires of the medical practitioner the applica-

tion of all he has been able to learn by the most thorough and careful research, and, frequently, his own deepest personal insight into the nature and phenomena attending the manifestation of disease in its great diversity of forms. It will not be expected, of course, that every person can be made, even by the most useful helps, a skillful diagnostitian, and on this account, perhaps, all medical knowledge can never do away with the necessity for a skillful physician. In a large proportion of cases the most important work for the physician to do is to make a diagnosis, thus ascertaining what is the real condition of the patient, and, from this, reasoning back to a discovery of the causes of the diseased state, by the removal of which, a very large proportion of all cases may be brought to recovery, even without the application of any remedial measures whatever.

PROGNOSIS.

Prognosis is an expression of the probable way in which the disease will terminate in any given case. Of course, the wisest and most experienced physicians can do nothing more than express an opinion respecting the result of the disease, since no one can foresee what accidents or unfortuitous circumstances may appear to prevent the result which might otherwise have been favorable. It is also impossible to tell in any given case how long the vital forces of the patient will hold out, or whether the patient has sufficient vital power to bring him to a successful issue. It is evident, then, that any expression respecting the termination of the case should be made with the greatest caution. It is frequently possible to guess with great accuracy, and a person of experience may be able to form from the various symptoms present and a consideration of the temperament, age, sex, constitution, and the hereditary tendencies of the patient, and also from his present condition and his condition at the beginning of the disease, a very correct estimate of the probabilities in the case. A knowledge of certain symptoms, which observation has shown to be, very frequently, if not always, characteristic of cases which will terminate fatally, is of great service as an aid to a correct prognosis. The following may be mentioned as among the most unfavorable symptoms: Dropsy occurring in connection with some organic disease, as of the kidneys or heart; great emaciation coming on gradually, and steadily progressing in the latter stages of chronic disease; patches occurring on the mouth or in the fauces during the advanced stages of chronic disease; disposition to slide down in bed; delirium in which, al-

though at home, the patient expresses himself as desirous to go home; persistent drawing of the arm toward the body when an attempt is made to feel the pulse; difficulty in protruding the tongue, or loss of power to do so, together with great trembling when it is protruded; very great difficulty in breathing; obstinate hiccough; what is known as the "Hippocratic countenance," by which is meant the peculiar appearance of the face observed in the last agonies of death,—pinched nostrils, sunken eyes, hollow cheeks, and general aspect of suffering.

GENERAL PRINCIPLES OF TREATMENT.

A few remarks on the general principles of treatment which should govern all who have any responsibility to bear in the treatment of the sick will be in place at this point. It is necessary at the outset to study the case with care, inquiring respecting the history of the disease as well as the previous history of the patient. Examine carefully into his present condition, interrogating every part of the organism so as to be sure of ascertaining all of the morbid conditions present as far as possible. Be careful to ascertain the cause of the sickness if it is possible to do so. When this is done, then institute measures for the relief of the patient. The following suggestions may be of service:—

1. The first thing to be accomplished is the removal of the cause of the sickness when it has been ascertained, if it is of such a nature that its removal is possible. Sometimes this is not the case, but often it is. For instance, if a person has become sick from breathing an atmosphere filled with poisonous gases, or vapors from arsenical wall-papers, common sense would dictate that he should be removed from the poisonous atmosphere into one which is perfectly wholesome. If the illness is the result of eating unwholesome food or drinking water contaminated with germs, these causes should be removed at once. Even if the difficulty exists in the patient's mind, as is not infrequently the case, especially in nervous diseases, something may be done to secure its removal by exerting upon the patient a proper mental influence. The importance of attention to the cause of the disease and its removal is generally very much neglected, though it is evidently a matter of primary importance.

2. Never apply or administer any remedy without a clear idea of how the patient will derive advantage from it, and without its being clearly required. Hap-hazard treatment always does more harm than

good. The application of a remedy when there are no distinct indications for its use is likely to result in evil rather than good. When it is impossible to ascertain at once the real pathological condition, so that a systematic plan of treatment cannot be entered upon, do not adopt any plan of treatment, but study the case carefully, in the meantime administering only such remedies as are indicated for the immediate relief of the patient or the palliation of his symptoms.

3. A cardinal principle that should govern every physician or other person who engages in the treatment of the sick should be to act in harmony with nature; that is, to endeavor to facilitate the remedial processes which nature institutes and in many cases carries forward to a successful result. Be very careful never to hinder the efforts of nature by officious interference. It is a much safer error in the treatment of the sick to do too little than to do too much. While administering treatment of any sort, the immediate effect as well as the remote influence of the remedies employed should be very carefully watched and studied, not only for the purpose of securing good results with the case in hand, but in order to make the experience valuable with reference to the treatment of similar cases. In many cases, perhaps the majority, the thing to be accomplished by treatment is not to stop the morbid action which is in progress, but to modify or control it. In a great majority of cases, especially in acute diseases, the object of the morbid action is remedial. Nature is at work, endeavoring to free herself from obstruction, to remove obnoxious elements from the system, or in some way to remove existing causes of derangement and to restore harmony to the vital processes; but nature works blindly, she is not intelligent, and often destroys herself in the effort of self-preservation, by too great intensity of action. Hence, when the morbid action is becoming too intense, it should be checked by the employment of well-known means for lessening vital action, which have already been described and of which cold is the most useful and an almost indispensable agent in the treatment of nearly all acute diseases. When the vital action is sluggish or is of too little intensity for the accomplishment of the object desired, at least within a reasonable length of time, such remedies should be applied as will increase or stimulate vital activity, for which purpose heat, electricity, and water properly employed, are among the very best of agents. On this account, the three agents mentioned are among the most indispensable remedies in the treatment of all chronic diseases, which are chiefly char-

acterized by insufficiency of vital effort. The effort should always be made to restore as far as possible the balance of vital activity in the different parts of the system, which balance is always destroyed whenever a part or the whole of the system is in a state of disease.

4 Since nearly all cases of disease, especially of acute disease, will recover if left to themselves, provided the vitality of the patient holds out until the remedial process is accomplished, it is in many cases of the very greatest importance that proper attention should be given to economizing and preserving the vital forces of the patient. Hence it is evident that depressing agents should never be employed when they are not distinctly and positively indicated. It is indeed fortunate for the present generation that the old-fashioned methods of treatment, the essentials of which were blood-letting and violent purgation together with mercurial salivation and other harsh measures of treatment, have gone out of fashion. It has been offered as an apology for the decline of the popularity of the remedies mentioned, among intelligent practitioners, that the nature of disease has changed, or the constitution of the people has changed. It seems to us that the latter suggestion is the true one, and in our opinion it is no wonder that the constitution of the present generation is decidedly different from that of the preceding, and that, as we have often heard said, "bleeding and purging are not well borne by people nowadays." The only wonder to us is that the people of the present generation have any constitution at all, with the exception of an individual now and then who is so happy as to be the descendant of some person who fortunately escaped the old-fashioned "mercurial course" of the last generation. The old idea that disease is a condition of excessive vitality was exploded long ago, and we are now waiting for the explosion of the modern fallacy, that all diseases, or a great share of them, are conditions of deficient vitality requiring stimulation carried to as great an extreme as was depletion in the old plan of treatment. The folly of the excessive-stimulant plan is still more clearly seen when it appears, as it does whenever careful and candid investigation is made, that the remedies employed as stimulants invariably operate in a manner directly opposite to the way in which they are intended to act. It has been most thoroughly demonstrated that alcohol, the most largely employed of the so-called stimulants, is a powerful depressant instead of a stimulant, that it destroys instead of creating force, and that it obstructs rather than re-inforces vitality. The

proper plan to pursue in choosing remedies is to select those which will accomplish the desired result with the least expense of vitality to the patient, as by this means he will be given the best possible chance for recovery; and in case there is any doubt whether the application of a certain remedy will do more harm than good, that is, whether it will hinder more than it will help the remedial process, or weaken the patient by lessening his vitality more than it will aid him by checking the morbid process,—we say, whenever there is any doubt as to which of these two ways will be that in which a remedy will operate, the remedy should by all means be omitted, as it will be far safer to trust the patient in the hands of nature than to incur the risk of employing a doubtful remedy.

5. In the treatment of disease, four classes of cases, considered with reference to the results of treatment, come under consideration: (1) Those in which by proper treatment a complete and perfect cure can be effected; (2) Those in which the disease process can be checked, the patient made very comfortable, and his life thus greatly prolonged; (3) Those in which nothing can be done except to delay the progress of the disease and lessen the patient's suffering; (4) Those which are not only absolutely incurable, but the progress of which can in no way be affected by treatment and all that can be done is simply to palliate the patient's sufferings and smooth his pathway to the grave. Whenever a case is taken in hand for treatment it should be carefully considered with reference to which of the results described may be expected; and although the case may be evidently hopeless it should not be abandoned, but all should be done which can be done to meet the indications in the case, if not for cure, for the palliation of the disease. This plan has the advantage also that in not a few instances in which it has been pursued the unfavorable opinion which has been entertained has by the result been shown to be erroneous, since the patient has, in spite of all discouraging predictions, ultimately recovered. We have in practice met several cases of this sort, and have in consequence made it a rule of practice never to abandon a case so long as there is the faintest ray of hope of effecting a cure, and even when the last hope seems to be destroyed still to continue our efforts for the relief of the patient even though nothing more than mere palliation may be expected; and even in cases of this sort we have in some instances been most happily disappointed in seeing patients recover, notwithstanding the apparently hopeless character of their disease.

GENERAL DISEASES.

Under this head we shall include chiefly those diseases which affect the whole system and which require in consequence general or systemic treatment. For convenience, and as we shall find no better opportunity for so doing, we will first give the proper methods of treatment of what have been already described as primary forms of disease.

IRRITATION.

This condition has already been described as being one in which there is an excitement or increased intensity of vital action.

Causes.—The causes of irritation, in the sense in which we are here considering it, are chiefly an increased intensity of the so-called vital stimuli, or those agents upon which the maintenance of life and health depends, as an excess of food, light, electricity, or mental influence. By any of these agents the vital action of the whole or a part of the organism may be increased to an abnormal extent. Where the excitement is not sufficiently intense to occasion disturbances of other parts of the organism it is called irritation.

Treatment.—The proper treatment of this condition involves chiefly the removal of the exciting cause. The departure from a normal condition is so slight that where the cause is removed, the vital forces quickly acquire equilibrium, and harmony is readily established. If the irritation arises from an excess of food, it is best not only to refrain from taking food in excessive quantities but to practice abstinence, or to take food in less than the quantity required in health for a short time. The same principle applies with reference to other causes of irritation and abnormal excitement. If the patient has been subject to excessive heat, make cooling applications. If irritation of the eyes has been produced by exposure to intense light, remove the light altogether or to a great extent for a short time. So, also, if the cause is too great mental activity from exciting influences, the latter should not only be removed but the patient should be given as nearly as possible absolute mental rest till an equilibrium has been established. In all forms of irritation sleep is a sovereign remedy, as the vital action is always lower

during this condition. Soothing applications, such as a tepid bath, a vapor bath of moderate temperature, gentle rubbing or massage, and in many cases the application of a mild current of electricity, are of the greatest service in the removal of irritation, whether of a general or local character.

CONGESTION.

This has also been described as a condition in which a part of the body contains too much blood. This morbid condition must evidently be of a local character, since the whole body could not be congested. Too much blood in one part necessarily implies too little in another part, unless, indeed, the patient be suffering from the condition known as plethora, in which the whole quantity of blood is abnormally increased and the usual symptoms of local congestion are extended to the whole system. The results of congestion and its accompanying symptoms vary greatly, according as it is active or passive in character.

Symptoms of Congestion.—Active congestion is characterized by an increased amount of arterial blood in an organ, the result of which may be temporary swelling or enlargement and pain, together with an increase of temperature and even redness in color. These symptoms are also all present in inflammation. That condition, as we shall show presently, is accompanied with other characteristic symptoms not found in simple congestion.

In passive congestion there may be swelling of the part, from the turgescence of blood or from the infusion of serum into the tissues, as in dropsy. If there is a change in color, the part will be dark and purplish, instead of bright red as in active congestion and inflammation; there may also be pain in passive congestion. If pain is present, it will be of a dull, heavy, continuous character, instead of acute, sharp, and lancinating, as is usually the case in active congestion. The causes of both active and passive congestion having already been given elsewhere, we do not need to delay on the subject here.

Treatment.—In the treatment of congestion it is of primary importance that its character should be recognized, as the modes of treatment to be employed in the two forms of congestion are essentially different. In active congestion there is excessive activity of the cir- [illegible] consequently, in many cases, of all the tissues of the or- [illegible] important indication of treatment.

then, is to lessen the activity of the blood-vessels, as well as of the other tissues in the congested part. There is no better agent for accomplishing this than cold properly applied. The degree of the intensity of the application will depend upon the violence of the action and the location of the disease. Cold applications may consist of simply tepid bathing or sponging, or the application of cool compresses, the cold pack, cold foot-bath, cold spray or douche, or the application of ice, according to the part affected or the effect desired. Special modes of application in the congestion of different cases will be pointed out in connection with the description of local diseases. Another excellent means of counteracting the effects of active congestion is derivative treatment; that is, artificially producing temporary congestion in other parts of the body, thus drawing the blood away from the affected part. This may be most easily done by means of hot applications in the form of fomentations or local hot baths. Dry heat may also be employed. In some cases, great benefit may also be obtained from the temporary ligation of certain parts, as of the limbs, by which a large amount of blood may be temporarily removed from the circulation. When possible also, the congested part should be placed in such a position that gravitation will aid in relieving it of its surplus blood, as, for example, in congestion of the brain the head should be raised above the level of the other portions of the body. The same may be said of local congestions elsewhere. This remark applies to both active and passive congestion.

In the treatment of passive congestion, the application of cold is less frequently indicated than in active congestion. In these cases, hot applications are generally much more successful, although we have usually obtained the best results in the use of alternate hot and cold applications. Cold applications produce at first a strong contraction of the blood-vessels and thus an increased activity; but if long continued, the vitality of the part is lowered, and hence the original difficulty will be increased. So also in the use of hot applications; the effect at first is astringent in character, like that of cold. It should be remarked, however, that applications for this purpose must be hot; that is, of a temperature above that of the body. Applications of a temperature from 106° to 110° F. are best. In extreme cases, a still higher temperature should be used. If too long continued, hot applications result in rather increasing than relieving the local difficulty. By alternating the two, however, it is possible to continue and intensify the good effects of

each remedy for some time. As a general rule in the treatment of congestion, hot and cold applications should be made at intervals of from two to six hours, and between the applications the part should be covered with a tepid compress, changed sufficiently often to prevent its becoming warm. Chronic and passive congestion of internal organs, when acessible, as in chronic congestion of the mucous membrane of the pharynx, may be benefited by the use of astringents; but by far the most potent remedy is the application of hot water or steam, as hot as can be borne without pain,—a temperature of 103° to 115°. When the congested parts are not accessible, as in the case of the liver, spleen, and kidneys, the hot and cold douche applied over the affected part supplies the best known means of relieving the difficulty. Another point of great importance in the treatment of passive congestion, which indeed should be attended to at the outset of treatment, is ascertaining the cause of the disease. If, as is often the case, the congestion is produced by mechanical obstruction of any sort, as by restriction of the clothing, by pressure, or by any other means of a like character, it should be promptly removed. Passive congestion may often be greatly relieved by rubbing. Care should be taken to rub the parts in such a direction as to press the blood forward in the veins, thus aiding the venous circulation, which is chiefly at fault in passive congestion. In cases in which the difficulty is continued until transfusion of the serum into the tissues has occurred, causing puffiness or swelling of the parts, great advantage may often be derived from the use of properly adjusted bandages. The bandage should be applied smoothly and with even pressure over all parts of the organ, in such a manner as not to interrupt the circulation. The rubber bandage is preferable to all others for this purpose.

DEPRESSION.

As elsewhere stated, depression is a condition in which there is a deficiency of vital action. It may be either general or local in character. Its symptoms may be either an increase or decrease of irritability. Increase of irritability in consequence of depression, although a seeming anomaly, is a well-established fact, having been determined by numerous observations, not only upon men but also upon animals, in which it is frequently found that just before dissolution, when the depression has reached the highest degree compatible with life, irritability is sometimes enormously increased. The irritability of depression is,

however, peculiar, being in a marked degree deficient in strength and vigor, usually lasting but for a very brief period, and being followed by a great increase in depression. Depression is one of the most prominent symptoms in all diseases of debility, in cases of convalescence from acute diseases or serious surgical injuries, and a great variety of local and general conditions.

The causes of depression, as elsewhere shown, are anything whatever which exhausts the vital forces faster than they are replenished by nutrition. The treatment of depression is exactly what would be indicated by the common sense of the most inexperienced person; that is, simply to economize the vital forces by lessening the expenditure of force so far as possible and increasing the supply through improved and augmented nutrition. The treatment of depression implies the application of all hygienic means, obedience to all hygienic rules, and placing the system so far as possible in harmony with all the laws of nature. When this is done, unless the cause is one which cannot be removed, the patient will shortly recover. The length of time required will, of course, depend upon the natural activity of his system, upon the degree of reserve force which he possesses, and upon the thoroughness with which he complies with the conditions necessary for recovery.

The popular treatment for depression is the use of tonics and stimulants. The theory of the application is that they impart strength to the enervated system. That this is not the case, however, is well known to every scientific physician. Indeed, not a few of the most eminent physicians declare with emphasis that stimulants are not strengthening, that stimulation means simply excitement, which, as we have already seen, in depression is always followed by an increase of depression, and that stimulants decrease rather than augment vital force. We also have good authority for the statement that tonics and stimulants are precisely alike in their action, differing only in degree. On account of their mildly stimulating effects, the depression following the use of tonics is not so noticeable as in the employment of stimulants proper. We cannot but regard the use of tonics and stimulants in chronic debility of any sort as erroneous in principle and deceptive in practice. They produce a feeling of strength which is not accompanied with an actual increase in vigor.

This is well shown in the experiments of Dr. Smith upon tea and coffee, two of the mildest of all agents of this class. He found that after taking a cup of strong tea, although previously depressed from prolonged

exercise, he felt an increased disposition to active exercise and found himself able to take muscular exercise with much greater ease than under ordinary circumstances. Thus far the effects of the stimulant and tonic seemed to be satisfactory, but unfortunately for the theory which maintains the utility of these agents he found upon awakening the next morning after the experiment, even though he had been recuperated by the influence of sleep, that he felt very much more fatigued and exhausted than after exercise without the use of tonics or stimulants. This experiment conclusively shows that the supposed strength imparted by tonic or stimulant is not real force or vigor, but simply apparent. By the use of tonics and stimulants the system is goaded into an expenditure of the force and vigor which it already possesses, but no additional strength is imparted.

This view of the action of tonics and stimulants is based upon scientific evidence so conclusive that there can be no doubt of its correctness. We do not say, however, as the reader has doubtless observed, that tonics and stimulants should never be employed in conditions of depression. What we insist upon is that they should never be employed with the idea that they impart strength, since this is a thoroughly exposed fallacy. They should be employed only when it is desired to accomplish what they are only capable of accomplishing; namely, to bring into action or develop forces which the system already possesses in a latent form. There are, no doubt, many cases in which this is in the highest degree desirable.

These cases are those in which there has been a sudden depression of vital action from any cause whatever. In these cases the sudden lowering of vital activity may be so great as to occasion death by the cessation of some of the important functions of the body before the system has had time to recover itself, although there may be sufficient vital force to bring about recovery if it were only developed at the right moment.

In cases of this sort the most powerful stimulants and tonics may be employed, as in the depression attendant upon asphyxia from any cause, syncope, or fainting, from loss of blood, great prostration as the result of poisoning, sudden collapse occurring in the course of some intensely acute disease, etc. In these cases life may be saved by the judicious employment of stimulants; yet even in such cases great care should be used that the stimulant is not employed so freely nor for so great length of time as to exhaust the vital forces beyond the extent to which they are recuperated, as when this is done much more harm

than good results from their use. Hence, the utility of stimulants is of a very limited character, and they should be employed only when good can be accomplished by their transient effects. Ordinarily, stimulants and tonics should be most sedulously avoided in the continuous treatment of depression. They are only for cases of emergency, and should never be employed day after day, week after week, or continued for months, as is often the case.

We firmly believe with many noted physicians that notwithstanding the good results which may be obtained by the proper use of stimulants, they may be dispensed with altogether, if proper substitutes are employed, without any detriment to the patient's chances for recovery. Electricity as a stimulant is vastly superior to alcohol or any other stimulant or tonic furnished by the materia medica. This potent agent so closely resembles the nerve force itself that it seems to be almost equivalent to a substitute in cases of extreme depression. As an excitant of vital action it is vastly superior to alcohol, and when properly used no unpleasant effects whatever follow its employment. It is indicated in all cases of debility or depression in which its use is not interdicted by some personal idiosyncrasy antagonistic to its influence. Sunlight employed in the form of the sun-bath is another natural tonic, the application of which may be indefinitely repeated without fear of causing subsequent increase of the diseased condition for which it is employed.

In all cases characterized by debility, avoid the use of all depressing agents. The patient should be relieved of care, and should be surrounded with cheerful conditions. The food should be abundant and wholesome, but simple in character and easy of digestion. As a general rule in chronic depression, the severe practices of the old-fashioned water-cure treatment should be most carefully avoided. Water may be employed judiciously with great advantage as a means of increasing nutrition. Massage may be carefully employed for the same purpose to very great advantage. More specific directions for treatment will be given in the consideration of various diseases characterized by depression and debility.

INFLAMMATION.

Inflammation, like congestion, is characterized by the four special symptoms, heat, pain, redness, and swelling. In inflammation, however, these symptoms are all much more intense than in conges-

tion. In this respect, inflammation may be considered as an advanced stage of irritation. It includes in its different stages all the primary morbid actions previously mentioned; namely, irritation, both active and passive congestion, and depression. On account of its resemblance to congestion it is sometimes not easy to distinguish between the two diseases, especially at the beginning of the morbid condition or process. Indeed, at the beginning there is no distinction, for the inflammatory process is induced by irritation and congestion. The real distinction between inflammation and congestion is not easily perceptible in the early stages, at least before any special results have been produced. Microscopical researches have shown, however, that there is a difference even at this early period which consists in the great increase of white blood corpuscles. This may be very easily observed in the delicate web of a frog's foot placed beneath the microscope. Upon placing the point of a needle or other mechanical or chemical irritant upon the membrane, all of the phenomena of irritation, congestion, and inflammation may be observed occurring in their proper order, the beginning of inflammation proper being indicated by the accumulation of white blood corpuscles in and about the gradually dilated blood-vessels of the affected part. There is every reason for believing that this is exactly what occurs in larger animals and human beings. If inflammation is arrested in its first stages, the effects are only those described. If continuous, however, the morbid action may give rise to the exudation of matters which afterward harden and cause induration of the parts, or the intensely local action may become so great as to occasion death of some of the tissues, involving coagulation of the blood and obstruction of the circulation.

This is what occurs in a boil. When death of the tissues has taken place, the dead parts are treated like foreign substances in order to prevent contamination of the system by absorption of the dead and disorganizing matter. The dead part is separated from the living by a wall of defense which is thrown up about it and by a layer of corpuscles exactly resembling white corpuscles of the blood, but in this case termed pus corpuscles. It is these corpuscles which form the greater part of the whitish or yellowish discharge from abscesses or suppurating wounds. As thus seen, it is wholly devoid of offensive odor, and is termed healthy pus; but when by the breaking down of dead tissues the pus becomes filled with products of decay, and is watery in character, it is termed unhealthy, or ichorous pus, and often has a very

offensive odor. Pus is formed partly from the blood, by the removal of its white corpuscles, and partly from the tissues themselves, which undergo destruction about the dead part for the purpose of loosening it and thus removing it from the body. If a part which has thus died has been loosened and removed, an examination of the surface beneath will show that underneath the purulent matter is a layer of small red prominences termed granulations, which indicate that new tissue is forming. By degrees the cavity left, if not too large, will be filled up with newly made tissue, which is, however, of a somewhat different character from that which was removed. It sometimes happens that in consequence of a still greater intensity of inflammatory action the tissue of the diseased part dies very suddenly, from the stagnation and coagulation of the blood in its blood-vessels. This is termed gangrene, the consideration of which must be left for the section devoted to surgery, to which province it particularly belongs.

Inflammation is generally described as being acute, sub-acute, or chronic, the distinctions between which are the same as those which govern the classification of other diseases. The symptoms above described are those of acute inflammation. In sub-acute inflammation the same symtoms will be noted, though their intensity will be less, and they succeed each other at longer intervals. In both acute and sub-acute inflammation the whole system participates in the disturbance. The greater the extent and the higher the degree of the intensity of the inflammatory process, the greater will be the general disturbance. The temperature of the body as well as that of the diseased part will be found almost invariably to be above normal. When a large and important organ, as a lung, the liver, or the stomach, is affected, the temperature of the whole body may rise to a very high point, while a very slight inflammation accompanying the efforts of the system to expel a sliver from the skin may not at all affect the general temperature. It is the great elevation of temperature which in the majority of inflammations is the thing to be most dreaded and which is the chief cause of a fatal result in a large share of the cases in which death occurs from inflammatory affections.

In what is termed chronic inflammation, the intensity of the vital action is much less than in acute inflammatory affections. Indeed, although the results of so-called chronic inflammation are in some respects similar to those of acute inflammatory action, it appears to us that there are good reasons for believing that there is really no such

thing as chronic inflammation, but that the condition generally denoted by this term is really only chronic congestion, either active or passive. We are sure that this is true of a large share of the cases usually included under the head of chronic inflammation, whether it be applicable to all or not, and we have never yet found difficulty in explaining the phenomena of what is generally termed chronic inflammation in accordance with the views expressed. When a part is affected by acute inflammation, if recovery does not take place it finally continues in a state of active or passive congestion, most frequently the latter, which is the condition generally known as sub-acute or chronic inflammation. Inflammations have been classified according to the variety of tissue affected by them, but as this classification is of no practical importance, we need not present it here. The especial characteristics of local inflammations will be given in connection with their description elsewhere.

Causes.—Inflammation may be induced by mechanical or chemical irritants, by poisons generated in the system or received into it from without, through morbid nervous influences, and perhaps by other means. Its general character is the same, however, whatever may be its cause.

Treatment.—The treatment of inflammation is essentially the same as that for active congestion, which has already been quite fully described. In inflammation, however, as the intensity of the morbid action is much greater than in simple congestion, the activity of the remedies employed should be proportionally increased. In the first stages of inflammation, cold and other agents for reducing heat and vital action should be energetically employed. The morbid tendency may be combated not only by the local application of cold, but by ·rivative treatment as directed in congestion, and also, from reflex ·ence, by applications to remote parts; as, for example, inflam- n of the brain may be treated by the application of cold, even the head, and of heat to an appropriate extent. By these means d will be cooled by the direct abstraction of heat, and also the contraction of its blood-vessels, in consequence of the n of the nerve centers which control the circulation of the same means may be employed in the treatment of inflam- e lungs, liver, kidneys, spleen, and other internal organs ation has continued until it becomes evident that sup- take place, it is often necessary to moderate the cold

applications, and in many instances it is best to employ hot applications, and thus facilitate the suppurative process so as to hasten the termination of the disease. Care should be taken in the treatment of the inflamed parts to avoid using cold in such a manner as to produce gangrene. The color of the affected part should be frequently observed. So long as it remains of a dull red color and is hot to the touch, cold may be safely employed. Bright scarlet redness without great heat should, however, be regarded as a contra-indication for the employment of cold, as it is a primary symptom of the death of the tissue, or gangrene, and when present, hot applications should be promptly made. Blueness of an inflamed part is also an indication for the application of heat.

In severe inflammatory attacks it should be recollected that the whole system requires attention as well as the local seat of the disease. The temperature of the patient should be kept as nearly as possible at the normal standard by means of sponge baths, packs, compresses about the trunk, ice to the spine, cold baths, and the other remedies elsewhere described as useful for this purpose. The diet of the patient should be unstimulating, and at the outset of the disease restricted in amount. In the beginning of the inflammatory affection the person may, without detriment, fast for twenty-four hours, and should for a day or two take only a very little and very light food. The importance of this observation is well shown by the fact that Nature usually indicates her inability to dispose of food under these circumstances by taking away the appetite. More specific directions for the treatment of inflammatory affections of special organs are given in connection with the treatment of local diseases.

GENERAL DISEASES OF NUTRITION.

Under the head of general diseases proper, we will first call attention to those which are dependent upon general disturbances of nutrition, and which, although in some instances involving numerous local derangements, are not known to be dependent upon any specific local disease or morbid condition. First among diseases of this class, as the most frequent of all, we will call attention to—

ANÆMIA.

This is a disease which is characterized by deficiency in the red blood corpuscles and in the nutritive elements of the blood. There are two varieties, acute and chronic.

ACUTE ANÆMIA.

SYMPTOMS.—Great pallor; hollow cheeks; sunken eyes; pinched nose; coldness; dry or clammy skin; frequently a weak pulse, which is easily excited by slight exercise; fainting, or tendency to faint on slight exertion; great weakness; swelling of the feet.

Cause.—The most frequent and almost the only cause of acute anæmia is excessive hemorrhage. The occasion may be a wound of any sort, surgical operations, blood-letting, bursting an air-vessel, nose-bleed, hemorrhage from the lungs or from an ulcer in the stomach, as in bloody vomiting. Acute anæmia is distinguished from chronic by its sudden appearance. It may be produced in an hour by sudden hemorrhage or may be two or three days in coming on in consequence of repeated small hemorrhages. The pallor by which it is characterized is peculiar, and gives to the patient a strange appearance, as it often occurs in persons who are quite plump.

The skin of a light-complexioned person acquires a dead, almost ashen appearance. In dark-complexioned people and the dark-skinned races, the color of the skin is darkened rather than lightened by anæmia. The thermometer indicates a considerable fall of temperature, not only externally but internally. Upon placing a stethoscope, or instrument for examining the chest, over the jugular vein, a peculiar sound will be heard, known as the venous hum, or '*bruit de diable*,' due to the thinness of the blood. Some of the symptoms noticed, as

unnatural pallor immediately resulting from loss of blood, may continue for a long time, and even for months and years.

Treatment.—Rest, good food, transfusion of blood or milk.

The first thing essential in the treatment of acute anæmia resulting from severe hemorrhage is rest. The patient should be placed at once in a horizontal position and kept so for some time, if there is the least tendency to syncope, or fainting, whenever he attempts to sit up or walk. After a large hemorrhage, absolute rest should be required of the patient, even if he does not experience premonitory symptoms of fainting when in an erect position. It is very important that this point should be recollected, as in many cases patients have died from sudden paralysis of the heart in consequence of standing upon their feet or walking after a severe hemorrhage. Sometimes the patient must be confined in bed not only for a few days but for several weeks. On account of there having been so great loss of blood, every means should of course be taken to increase the patient's nutrition. He should be given an abundance of wholesome food prepared in a manner easy of assimilation. Tonic treatment, particularly the use of electricity and massage, is of very great value. In severe cases of hemorrhage, in which the patient's life has been seriously threatened, and in other cases in which the urgency of the case is not so great, blood has been injected into the veins of the patient by the process known as transfusion. Both human blood and the blood of animals have been employed for this purpose.

Although the process of transfusion is attended with considerable danger, there is no doubt that many lives have been saved by it. When the blood of the lower animals is used, a peculiar and even dangerous disturbance of the system follows; and in case the amount of blood injected is quite large, inflammation of the kidneys occurs. These results are said not to occur when human blood is employed and injected in a proper manner. Very recently the injection of warm, fresh cow's milk has been employed by Dr. Thomas of New York and others, and, as it is claimed, with the most favorable results. This process can of course be used only by expert surgeons.

CHRONIC ANÆMIA.

SYMPTOMS.—Dry, thin, wrinkled skin; emaciation; shortness of breath; nervousness; baldness; dropsy; fatty degeneration of the heart, liver, kidneys and other parts; in women, amenorrhœa and leucorrhœa in many cases.

The symptoms of chronic anæmia are, with slight exceptions, included in those of acute anæmia, the chief difference being that instead of being produced so suddenly as in the acute form they occupy a long time in appearing.

Causes.—Under the leading causes should be noticed first, predisposition. Some persons inherit a tendency to hemorrhage, having what is termed hemorrhagic diathesis. Such persons are commonly known as "bleeders." Women are much more liable to chronic anæmia than men, principally owing to the fact that they have about one-tenth less blood in proportion to the weight of the body, and partly because they are more exposed to the causes which occasion the disease in the chronic form. Another cause of anæmia is deficient nutrition, or the use of too small a quantity of food. As the blood is made of what we eat, it is evident that if too small a quantity of nutritive material is introduced into the blood its elements will be deficient. Deficiency of light and of pure air may also be justly mentioned as common causes of anæmia. This is very clearly shown by the great frequency of the disease among milliners, factory operatives, and others who are much excluded from the sunshine and obliged to breathe impure air. Excessive or deficient physical exercise is another frequent cause of anæmia. A person who takes too much exercise may use up the elements of the blood more rapidly than they can be produced from the food which he is able to digest. On the other hand, deficient exercise occasions deficient nutrition by causing loss of appetite, impaired digestion, etc. Exposure to excessive heat or to a low temperature are both causes of anæmia. Prolonged nursing in women, sexual excesses in either sex, serious hemorrhage, external or internal, and numerous forms of disease, particularly spermatorrhœa, leucorrhœa, animal parasites, dyspepsia, and fever, are frequent causes of anæmia. Parasites are a common cause of the disease in this country, and very frequently in Egypt, where a peculiar animal parasite infests the small intestines of individuals, and thrives by sucking the blood of the patient. Chronic dyspepsia is one of the most frequent of all causes of anæmia. A person cannot be a dyspeptic for any length of time without becoming to a greater or less degree anæmic. A severe fever will produce anæmia almost as rapidly as a hemorrhage, by interfering with the nutritive processes as well as by destruction of the nutritive elements of the body through rise of temperature. Chronic anæmia is a very common af-

fection, especially among women and children. It should not be looked upon as a diseased condition which is attended by no danger, as it is a powerful predisposing cause of other and more fatal diseases, besides being itself capable of producing death if sufficiently long continued.

Treatment.—It is evident that the first step in the treatment of this disease should be to remove the cause. If the cause is dyspepsia, this must receive attention; if intestinal parasites, they must be dislodged; if prolonged nursing, nursing must be interdicted; if too little food, a larger quantity of nourishing, wholesome food must be employed. The mistake must not be made, however, that by good food is meant what is usually termed rich food or a stimulating diet. Neither should a large quantity of animal food be taken, especially when the digestive organs are impaired, a fact which is seldom observed. In some cases also, particularly those in which there is a degree of fever, rest is an essential for recovery. The patient should be put to bed and required to remain there until he has gotten into a condition in which it is safe for him to exercise. At first, exercise should be exceedingly moderate, being gradually increased. Tonic remedies should be employed. Electricity and massage are among the most useful of all agents. Inunction is another very useful remedy. Sun-baths as a tonic in the treatment of anæmia cannot be extolled too highly. If the patient is able to do so, a large amount of exercise in the open air should be taken daily, when the weather does not prevent. We have frequently attained good results in the employment of Trommer's extract of malt in many cases of chronic anæmia. It is a most admirable substitute for cod-liver oil, as has been shown by experiment on a large scale in German hospitals. Dropsy, when present in such a degree as to render special treatment for it necessary, may be best remedied by the use of such diaphoretics as the Turkish or vapor bath. Care must be used, however, in the administration of the bath that the patient be not weakened thereby, and consequently it should not be applied until a considerable degree of strength has been secured.

The popular remedy for anæmia in all its forms is iron, which is administered in a great variety of forms. The theory upon which this practice is based is that the blood corpuscles are deficient on account of the deficient supply of iron, or at any rate that their increase may be augmented by a supply of iron to the system. That this is an error, however, will be readily seen when attention is given to the fact

that the food contains a much larger amount of iron than is really needed by the system, as also by the fact to which we have called attention in considering the use of iron in medicine, that it is exceedingly doubtful whether the system can assimilate iron or any other mineral in an inorganic state. It is certain that the partially organized form in which inorganic substances are received as food is much more favorable to their absorption and assimilation than the inorganic state in which they are employed in medicine.

Another fact should be taken into consideration, namely, that when iron is administered as a medicine, an examination of the discharges from the body shows that if any proportion of that taken into the stomach is absorbed, the proportion is exceedingly small, nearly the whole being expelled with the bowel discharges, as elsewhere remarked. It is very probable indeed that the favorable results apparently obtained from the use of iron are really the effects of the other remedies employed or of the improved hygienic conditions of the patient. We are certain at least of having cured or helped to recover some cases of anæmia without having found it necessary to resort to the use of iron, and never have seen any benefit whatever from its use in the few cases in which we have employed it experimentally.

Although this doctrine may be considered by many very heretical, we are glad to know that we are not alone in the profession in our skepticism as to the value of iron as a therapeutic agent, as we have shown in the previous part of this work.

An exceedingly fatal, but fortunately rare, form of this disease, known as *progressive anæmia*, has been observed during the last few years. It is particularly apt to occur during pregnancy, and especially in women who have borne several children in rapid succession. In genuine cases of this disease it is stated by the few physicians who have observed them that no remedies thus far employed have been of any value. The patients steadily decline from the first in spite of all hat can be done for their relief, the fatal termination being reached in on six or eight weeks to some months.

CHLOROSIS.

SYMPTOMS.—Pale or yellowish countenance, dark circles about the eyes; palpita- f the heart; lassitude; variable and perverted appetite; depression of the usually suppressed or scanty menstruation.

rosis is a disease closely allied to anæmia. It in fact presents

many of the symptoms of the latter disease, though there are several points of difference, one of the most marked of which is that there is little or no emaciation in chlorosis and may often be an increase of flesh, while in anæmia the opposite is almost invariably the case. Chlorosis generally occurs in young girls just entering womanhood, though it may occur in women at any period of life, and there have been a few instances of its occurrence in men. It usually occurs just after the beginning of menstruation. One of the first symptoms noticed is lassitude on slight exercise. Increasing loss of color is next observed, the cheeks becoming blanched, and, in brunettes and persons with dark complexions, acquiring a yellowish tinge which has a greenish appearance in contrast with the dark rings that encircle the eyes. In addition to the symptoms enumerated above, the patient suffers with anæmia, or the symptoms of anæmia, such as great shortness of breath upon taking even slight exercise. In many cases, hacking cough, nervous disorders, derangement of the digestion, obstinate constipation of the bowels. Sometimes slight dropsical appearance and swelling of the ankles occur, although this last symptom is not so serious as is generally supposed, the appearance of œdema being deceptive. One of the most unaccountable peculiarities of the disease is the great perversion of the appetite, the patient frequently eating slate and lead pencils, chalk, clay, even cotton, wool, and other indigestible substances, when not observed. It is generally supposed that suppression of menstruation, or amenorrhœa, is a constant symptom in chlorosis. This is not the case, as many cases have been observed in which this function was performed as regularly and even more profusely than in health.

Causes.—Among the causes of chlorosis the first that should be mentioned are unhygienic habits of life, particularly sedentary habits, and the unwholesome mental condition produced by the reading of novels and other sentimental literature. The practice of secret vice very often entails upon its victims this serious disease. Many cases of chlorosis are due to the artificial modes of life imposed upon young girls by the habits of modern society. This accounts for the very great increase in the frequency of the disease which has been noticed within the last forty or fifty years. There can be no doubt that the neglect of physical culture among girls is a most potent cause of this malady. An unwholesome diet, particularly the use of pastry, highly seasoned food, condiments, fats, and sugar in the shape of preserves, candies, and sweetmeats, has much to do in producing this disease. Lastly may be mentioned a hered-

itary disposition and congenital defects. An eminent German observer has shown that in many of the worst cases of this disease the large arteries of the body are exceedingly small, to which defect he thinks the disease is in many cases due. The popular supposition that it is caused by suppression of the menses is not supported by facts. In this, as in most other diseases in which the symptom referred to is observed, the suppression of the menstrual function is an effect of the disease rather than the opposite. It is necessary to keep this point in mind, as it has an important bearing on the treatment. Another popular theory respecting the origin of the disease, namely, that it originates in the emotions, being particularly induced by disappointment in love, is not without foundation, although cases in which it originates in this way are by no means the most common.

Treatment.—The first measures to be adopted are those which will secure, as far as possible, the removal of the causes of the affection. The diet should be properly regulated, the patient being required to take such food as will encourage elimination from the system of the products of excretion, which are diminished in this affection in a marked degree, the urine being pale and containing less than the usual portion of urea. Fruits, and such grains as oatmeal and whole-wheat meal, are among the most excellent articles of food for persons suffering with chlorosis. Sugar and fats should be avoided. Exercise should be taken in the open air, and the patient should be exposed to the sunshine as much as possible and surrounded with cheerful conditions. No special treatment should be employed for the purpose of bringing on menstruation until the patient's condition has been improved otherwise. Indeed, it is seldom necessary to give this symptom especial attention, as the function will be speedily restored when the cause of its suppression has been removed together with the other morbid conditions from which the patient has suffered. As is the case with anæmia, the favorite remedy in the popular treatment of chlorosis is iron, and there is little doubt that the administration of large doses of this drug will often cause the disappearance of some of the most prominent symptoms of the disease; but those who have had the most experience in the treatment of this affection admit that iron has no curative effect upon the real morbid condition present in this disease, and that all it can do is simply to palliate or temporarily remove the symptoms of the disease; for when its use is discontinued the great majority of cases will speedily relapse. It should be further stated with reference to the use of iron, that it very frequently greatly impairs the

digestion, and consequently stands directly in the way of the effectual and permanent cure of the disease. Notwithstanding the general reliance placed upon this drug, it is undoubtedly accountable for a very large proportion of the failures in the treatment of this affection. We are thoroughly convinced by experience in the treatment of cases of this sort that they can be much more successfully treated by other means. We have never yet failed to cure cases which have come under our care by careful regulation of the hygiene of the patient, and the use of electricity, massage, and other remedies calculated to improve the character of the nutritive processes of the patient. No harsh or reducing remedies should be employed; but it is of very great advantage to encourage elimination to a sufficient extent. For this purpose the proper employment of water in connection with electricity is of very great service. The wet-hand rub with salt water every day, or three or four times a week, together with sitz baths three or four times a week, and, when possible, the application of electricity two or three times a week in such a manner as to secure a tonic effect, are useful for this purpose.

PLETHORA.

SYMPTOMS.—Excessive redness of the face and lips; increased heat of the body; unnaturally strong and full pulse; unnatural mental and physical activity.

This condition is exactly the opposite of anæmia. It is characterized by an excessive activity of the blood and an increased number of the blood corpuscles. The blood is also highly charged with the waste products or excrementitious elements of the body. In consequence of this, the disease is exhausting in character, producing continual mental activity or restlessness. It also, on account of this increased activity which often amounts to irritability, produces inflammatory diseases and fevers, while the excessive fullness of the blood and consequent increase of pressure within the vessels occasions a tendency to apoplexy in consequence of hemorrhages of the brain, and also hemorrhages in other parts of the body.

Causes.—The causes of plethora are too much food, especially highly seasoned and stimulating articles; the excessive use of fats, sugar, and other clogging substances; too slight exercise; the result of which is that while new material is brought in, the old material is not removed as it should be, and consequently many vital organs become sluggish in action and the vital fluid becomes irritating in character.

Treatment.—The treatment of plethora is, in most respects, as nearly as possible opposite to that recommended in anæmia. The patient should be instructed to restrict his diet and to abstain wholly from the use of flesh, condiments, fat, and all stimulating foods. Sugar should be used very seldom. The diet should consist chiefly of fruits and grains, and food should be taken twice a day, never between meals. The patient should take a large amount of exercise daily, and be in the open air as much as possible. A course of energetic eliminative treatment is necessary to arouse to activity the sluggish organs, and by this means to purify the blood and thus improve it in both quality and quantity. There is no necessity for blood-letting, the practice so much in use for the relief of plethora a quarter of a century ago. At that time it was so commonly resorted to for this purpose that ordinary barbers practiced it, and many people considered it almost as essential to be bled as to be shaved or have their hair cut. All the benefits that could possibly be derived from bleeding may be obtained from the use of Turkish, Russian, vapor, and hot-air baths, and from the use of packs, rubbing wet-sheets, electro-thermal, and other forms of bath. Medical treatment is scarcely called for in the treatment of this affection, since recovery speedily takes place when the causes are removed.

OBESITY, OR CORPULENCE.

SYMPTOMS.—Excessive fatness; excessive sebaceous and perspiratory secretion; shortness of breath, and often palpitation of the heart upon making slight exertion.

The characteristics of this disease are so well known that it is unnecessary to go into an elaborate description of the condition of the system in corpulency. The disease may occur at any time of life, but is by far the most frequent in early infancy and after forty years of age. Women are more frequently affected than men, the disease usually making its appearance in them at, or near, the change of life. In such extraordinary cases of obesity as that of Mr. Bright, of England, who attained the enormous weight of 609 lbs., or those in which the weight of the body is increased from two to four times that in health, there is, of course, no difficulty in discovering the disease; but in many cases it is by no means easy in a given case to decide whether the condition is one of obesity or of slightly increased fatness, which is usually termed "good condition." Indeed, it is probable that the condition of moderate rotundity which is consistent with the enjoyment of the highest health passes by such slow steps into a condition of disease from superabundance of food that there

is no distinct dividing line. For practical purposes, however, it must be said that a person is in a morbid or diseased condition on account of the increase of fat whenever the accumulation becomes so great as to perceptibly interfere with any of the vital functions. In addition to the symptoms already mentioned, various local symptoms are often observed, as varicose veins in the lower limbs, unnatural redness of the face, and especially of the nose, clumsiness of gait, and a sediment in the urine. In consequence of the body being covered with a thick layer of fat, there is a marked tendency to the accumulation of heat, which is conducted away from the body very slowly, so that the person is made to suffer greatly with heat, especially in the summer season and upon making violent exertion. To guard against injury from this source, nature sets up a profuse perspiration whenever the system is exposed to an unnatural degree of heat from either internal or external causes, by which the patient is often very greatly weakened.

Singular as it may appear, the condition previously described as plethora is by no means constant in obesity. In many cases the condition of the blood is that of anæmia, there being a marked deficiency in the proportion of red blood corpuscles. Indeed, there must be a decided tendency to anæmia manifested, sooner or later, in nearly all cases of obesity. This is an important point to be borne in mind, as it has a practical bearing on methods of treatment. The excessive accumulation of fat is not, as may be supposed, confined to the outside of the body. Post-mortem examinations of corpulent persons have shown that nearly every organ and structure of the body, internal as well as external, suffers from the excessive deposit of fat. The liver is usually more or less enlarged, sometimes greatly so, and is infiltrated with fat. The kidneys are not only imbedded in a mass of fatty tissue, but their substance is also filled with it. The heart is generally loaded down with fatty accumulations, and the walls of the arteries are more or less weakened by the exchange of their normal tissues for fat. The muscles, also, are invaded by the fatty deposits in a very marked degree. In fact, very few, even of the most delicate organs of the body, escape the general morbid tendency. These changes in internal organs are what are known and have been previously described as fatty degeneration, and the consequences of these morbid processes entail upon the sufferer from obesity the most serious effects of this disease. The deficiency in the number of red blood corpuscles gives rise to an unpleasant, and often serious dyspnœa, or difficult breathing, which is occasioned by any unusual ex-

ercise. The change in the structure of the heart is the cause of frequent, and sometimes serious palpitation. In severe cases the heart's action becomes extremely weak and irregular. One point which may be worthy of particular mention is that obesity not only entails upon persons subject to it certain inconveniences which arise directly from this morbid condition, but renders them in a very unusual degree liable to suffer from various other diseases, among which may be mentioned as those to which corpulent people are particularly liable, apoplexy, rheumatism, gout, diabetes, severe colds, fevers, and inflammatory affections of all sorts.

The tendency to apoplexy as being characteristic of this disease is readily accounted for by the changes in the blood-vessels, by which their walls are weakened and thus rendered much more liable to rupture from any degree of pressure induced by exercise, emotion, excitement, or any other cause. The frequency of rheumatism and gout in fleshy persons is undoubtedly occasioned by the retention of the waste products, or excrementitious principles, in the system, which results from the torpid, inactive state of the liver, kidneys, and other excretive organs. It is this gross condition of the system also which predisposes an obese person to febrile and inflammatory affections; and we should not omit to remark that when the last-mentioned diseases occur in very corpulent people they almost invariably manifest an unusual degree of severity and fatality. On account of the grossness of the blood and the lowered vitality of the tissues in consequence of their impaired condition, certain skin diseases, particularly eczema, are very common accompaniments of obesity. This is particularly true of young children, in whom excessive fatness is the most common cause of the often very troublesome affection known as intertrigo, or chafing.

When left to itself the disease finally terminates in death, which may be either the direct result of the enormous accumulation of fat through interference with the operation of the vital organs, or, as is much more frequently the case, death may result from apoplexy, syncope, or from any acute or chronic disease with which the patient may become affected, either independently or as a direct result of his obesity.

The only diseases at all likely to be confounded with obesity are gen- dropsy and emphysema. The first condition may be readily dis- ished by means of the phenomena of bloating (see "Dropsy"); the l morbid condition, which is a peculiar affection in which the tissues distended with air, may be readily distinguished by the resonance l by tapping or percussing the affected part.

Causes.—Many persons inherit a predisposition to obesity. This is often seen in families in which parents exhibit a decided tendency to excessive corpulency. In some instances, all of the members of a family may be affected by it. It is also noticed that when the disease is manifested in parents at a particular age it is very likely to occur in children at or about the same period of life. As before mentioned, the disease seems to depend somewhat upon age, being much more frequent in early childhood, after forty years of age, and in females after change of life. The greater liability of females to this affection is noticed in infants as well as in adults. Those individual peculiarities which make up what is termed temperament also appear to have much to do with the causation of this disease, it being well known that phlegmatic or lymphatic people are much more liable to it than are those of an active, nervous temperament. The immediate or exciting causes of obesity are excesses in diet, deficient exercise, and morbid conditions of the system due to other diseases. Gluttony and laziness have long been recognized as the two great causes of obesity, so that it has become customary to regard an excessively fat man as one who has been given to the gratification of appetite and is of an indolent disposition. This does not, however, apply to women in that degree in which it is applicable to men, since, as before remarked, they are at a certain period of life liable to this disease independent of hereditary predisposition or of habits especially calculated to provoke its manifestation. There are, of course, exceptions also among men, and yet the general rule holds true in so large a proportion of cases, that, as before remarked, a fat man is generally considered as one who is, or has been, an excessive eater, and has been given to habits of ease and luxury. As has been previously mentioned, obesity is an accompaniment, or possibly the result, of the morbid conditions present in several diseases named, but most frequently in chlorosis. Certain diseases of the lungs and heart also, in consequence of diminishing the elimination of the waste products of the system, produce a marked tendency to the accumulation of fat. The same may also be said with reference to what is known as Addison's, or the Bronze disease. With reference to the influence of diet in the production of this disease, it should be further explained that obesity is produced, not alone by the excessive use of fat, but by an excess of certain other kinds of food, particularly those of a fatty or carbonaceous character, as the development of fat is particularly favored by food of this class.

It is well known that animal fats when taken into the system are

deposited with little change, and hence greatly favor the production of adipose tissue. It has not been thoroughly proven that starch, sugar, or gluten is converted into fat in the system; but there can be no doubt that these substances supply the place of the material which otherwise would be consumed, but, in consequence of the substitution, may be converted into fat, so that they become indirectly, if not directly, the cause of excessive fatness when taken in large proportions. The obesity of children is not infrequently due to artificial feeding, the food given being of such a character as to produce fat in disproportion to the amount of muscular tissue formed.

Treatment.—In calling attention to the treatment of this disease we wish especially to impress upon the reader the fact that obesity is by no means so harmless and insignificant a disease as is generally supposed. This might well be inferred from the marked and grave character of the many effects occasioned by excessive fatness, to which we have already called attention. Hence it cannot be too much insisted upon that decided measures should be promptly adopted, not only for the cure of this malady whenever it is found to exist, but also for its prevention whenever there is known to be a hereditary tendency to it, or conditions which will be likely to induce it. Obesity is by no means so easy to cure as might be supposed. When once thoroughly established upon the system, and especially when of a hereditary character, it is found exceedingly difficult to cure, patients not infrequently relapsing after an apparent cure has been effected, and in many cases receiving little benefit by any mode of treatment which they can be induced to undergo. One of the great obstacles in the way of the efficient treatment and radical cure of the disease, is the reluctance manifested by many of those affected by it to comply with and assist in carrying out the measures of treatment essential to secure recovery. This is especially the case when the disease has been brought on by excessive indulgence in eating and indolence. The force of long-continued habit is so strong that in many cases the patient affirms that he would prefer to suffer the inconveniences of the disease and incur the risk of ultimate suffering and premature death which it involves, rather than forego the gustatory enjoyments to which he has long been accustomed. The strong aversion to physical exercise is another impediment in the treatment of this disease, the cure of which in many cases depends in great measure upon the cultivation of habits of regular, systematic, and even severe, physical exercise. The measures of treatment to be adopted for the cure of the disease, and also for its preven-

tion in cases where there is a marked tendency to it from any cause, are such as will secure the following conditions:—

First, the diminution of the supply of food, especially fattening food, or that which has a tendency to induce obesity.

Second, an increased consumption of muscular tissue, thus creating a demand for food for the legitimate purpose of replenishing waste.

Third, the increased formation of red blood corpuscles, which are deficient in the many common forms of obesity.

Fourth, an increased supply of oxygen to the system, by means of which the surplus material which would otherwise be deposited as fat will be consumed and so removed from the body.

If such measures of treatment can be adopted as will secure the perfect realization of the four indications mentioned, cases of obesity in which recovery cannot be secured will be very rare indeed. The only difficulty is in securing the necessary conditions. The first of these may be secured in the manner already suggested; namely, by diminishing the amount of food taken by the patient, especially of those substances which have a tendency to produce fat. The mistake should not be made, however, of supposing that obesity is to be cured by starvation. The problem to be solved in the dietetic management of the disease is to diminish the amount of surplus and useless material in the form of fat without at the same time lessening the patient's strength and undermining his constitution.

The starvation cure, while it will undoubtedly rapidly diminish the weight, at the same time reduces the patient's strength and induces a condition of anæmia, or poverty of the blood, which is very likely to result in a relapse into a condititon far worse than the first, since obesity occasioned or accompanied by anæmia is far more obstinate to cure than any other form. Consequently, those measures of treatment which greatly weaken the patient are much more likely to do harm than good, so that the remedy will prove far worse than the disease. The patient's diet should be reduced to a minimum in quantity, but it should be so carefully adjusted that sufficient nourishment shall be given him to maintain his strength. In extreme cases of obesity the restricted diet may be employed for a very short period; certainly not sufficiently long to in any very great degree weaken the strength of the patient. The regulation of the quality of the diet is of fully equal importance with the restriction with reference to quantity.

The following articles of food, on account of their tendency to increase fat, should be entirely forbidden: Butter, cream, fats of every description, rich sauces, pork, goose, duck, most kinds of game, salads, pastry, ices, raisins, dates, figs, all kinds of sweet and preserved fruits, nuts of every description, and, in fact, nearly all kinds of starchy, fatty, and saccharine articles of food.

The following articles may be eaten occasionally, but should be taken very sparingly indeed: New or unskimmed milk, eggs, potatoes, carrots, parsnips, and most other vegetables, rice, buckwheat, mutton, and beefsteak.

The articles in the following list, and those of a similar character, should form, almost exclusively, the diet of a person suffering with obesity: All kinds of green vegetables, such as asparagus, cabbage, green peas, beans, and spinage; and acid fruits, such as lemons, sour oranges, sour apples, and currants. Of the grains, cracked wheat, graham flour, rye, and oatmeal in moderate quantities, may be eaten. Meat should be used in moderation, the best varieties being venison, chicken, trout, and lean beef wholly free from fat. All the articles of food mentioned should be cooked entirely without the use of either fat or sugar. Very moderate quantities of salt should be employed. Tea, coffee, chocolate, and cocoa should be entirely interdicted, as also should all kinds of alcoholic drinks, and stimulants and narcotics of all kinds. The idea that animal food is the diet *par excellence*, and that articles of food of this class may be taken in almost unstinted quantities without harm, is a very mistaken one. This statement is based upon the following facts:—

First, food of an exclusively albuminous character is capable of forming fat and thus contributing to the production of obesity. This is true, however, only when it is taken in excessive quantities, as has been shown by numerous experiments upon animals

Second, the use of large quantities of animal food favors the increased production of urea and the retention in the blood of the excrementitious principles, which, as previously remarked, are among the most potent causes of the many grave effects which result from obesity, particularly the great liability to inflammatory affections, fevers, rheumatism, and gout. In not a few cases in which an exclusive animal diet has been adopted in this disease, the patient has found himself in a much worse condition from the injurious effects of his clogging and stimulating diet than that occasioned by the original disease. This

we regard as a very important point to be kept in mind in the treatment of obesity, on account of the wide-spread and popular character of the error and the serious evils resulting from it.

While the amount of solid food should be reduced to the minimum quantity, as before remarked, the fluid portion of the diet, at least if pure water be the only drink, may be increased to any extent required by the desires of the patient. It is even advisable to urge upon the patient the importance of drinking daily considerable quantities of pure water, preferably cold water, as warm drinks are not to be recommended in this disease on account of their tendency to increase the activity of the skin, which is already abnormally active. From six to ten, or even more, glasses of water may be taken each day with benfit, unless there is a marked disturbance of digestion of a character to contra-indicate the taking of so large a quantity of fluid. The object of this measure is to increase tissue change by increasing the fluidity of the blood. The efficiency of water-drinking as an agency for this purpose has been fully dwelt upon elsewhere.

The patient should be encouraged to take exercise to the full extent of his ability. It would, of course, be useless to recommend to persons advanced in years and excessively corpulent to engage in any very active or violent physical exertion. Such a recommendation might, in extreme cases, even prove fatal by occasioning excessive action of the heart or congestion of the brain, the results of which might be sudden paralysis of the heart on account of its weakened condition, or apoplexy through rupture of a blood-vessel in the brain. There are very few curable patients, however, even those who are the most remarkable specimens of obesity, who are unable to walk, at least for a short distance, and these should be urged to take as much exercise of this sort each day as they can endure, not of course attempting too long walks at first, nor continuing the exercise sufficiently long to produce very great exhaustion, but repeating it at sufficiently short intervals to secure the largest possible amount of exercise each day. For younger persons, those who suffer in a less marked degree, swimming, rowing, and the practice of gymnastics, may be recommended as a particularly efficient mode of exercise, as it brings into action the muscles of the upper as well as of the lower extremities and also those of the trunk. Only the lighter kinds of exercise should be taken, especially at first, but this should be done regularly and systematically, if possible under the eye of a tutor, at least at first, so as to secure thorough and methodical exercise of the whole muscular system.

Hippocrates recommended vigorous exercise as a sovereign remedy for excessive fatness. He also made what seems to us a very sensible suggestion, namely, that obese persons should accustom themselves to light, thin clothing in winter as well as in summer and the practice of exposing the uncovered body for a considerable length of time every day to the free action of cool air. By the adoption and faithful application of the hygienic measures already suggested, the great majority of fat people may reduce themselves to reasonable proportions. Not infrequently, however, a considerable length of time may be required, but the patient should persevere, feeling sure that the course which he is pursuing is the wisest one which can be adopted, and will, in all probability, secure for him the best results which can be obtained. If the dietary suggested becomes so unpalatable that the appetite is impaired and the digestion is in danger of suffering, a slight modification may be made for three or four days or a week to give the patient a little opportunity to recover his appetite and enable him to enter upon his regimen again with renewed vigor. It is better to adopt a rigid dietary and then interrupt it at intervals of three or four weeks in the manner suggested, than to endeavor to follow continuously a more liberal regimen.

All cases of excessive corpulency, and especially severe cases, may be greatly benefited, and the chances for recovery greatly increased, by other measures of treatment in addition to those already mentioned. The most useful of these are frequent cold bathing and the employment in plethoric cases of powerful eliminative measures. A cold sponge or shower bath may be taken daily with benefit. It should be of short duration and taken in a warm room, and great care should be exercised to secure thorough reaction. In addition to this treatment, one to three vapor or hot-air baths and wet-sheet packs may be taken each week with benefit. When there is great inactivity of the liver and kidneys, daily fomentations over these organs and the wearing of the abdominal bandage will be found of very great advantage. The excessive tendency to sweat which is present in this disease, although a remedial process, sometimes requires checking on account of its weakening tendencies. For this purpose cold shower and sponge baths are indicated. Another excellent measure of treatment is daily sponging of the body with an astringent wash composed of one part vinegar to three parts of a decoction of sage, oak-bark, or some other mild astringent. The increased secretion of fat will also be checked by this

method of treatment. Much may be contributed to the patient's comfort by bathing the parts most affected with equal parts of alcohol and water, by which the excess of sebaceous matter will be removed.

We are aware that we have devoted more space to this affection than the general opinion of its importance would justify; but this we have done on account of the fact that it is generally neglected by medical writers, and, as before remarked, is quite too commonly regarded as of too trivial moment to require serious attention except on account of its inconveniences. We cannot properly conclude this subject, however, without calling attention to two notorious evils. We refer to the tobacco cure of obesity and the numerous quack nostrums advertised and sold under the taking title of "Anti-Fat" remedies. With reference to the tobacco cure of corpulency, much might be properly said, but as we can say nothing better on the subject, we are glad to be able to quote the following excellent remarks by the eminent Prof. Immermann, of Bâle, which are worthy of special attention, coming as they do from a gentleman whose nationality is certainly not remarkable for antipathy to the weed: "While English and American physicians have celebrated tobacco-chewing as a very efficacious prophylactic against corpulence, and prescribed it, we can by no means coincide in such a recommendation in any case, since this nauseous habit can scarcely in our opinion act in a limiting manner upon the deposition of fat, otherwise than by undermining the appetite, and by setting up a chronic dyspepsia, provoking a certain degree of marasmus. The same holds good, and perhaps in a still higher degree, of other customs and vices, such as the habitual use of the preparations of *coca* and *hashish*, and of *opium-smoking*, and above all, of that senseless and injurious *misuse of morphia in subcutaneous injection*, which latter fashionable vice is, as we know, at the present day so much in vogue that in some places, and especially in medical circles it is looked on as quite the mode to be a slave to it."

The remarks of Prof. Immermann respecting the manner in which the excessive use of tobacco antagonizes obesity, apply with particular force to the numerous anti-fat nostrums advertised so extensively in the newspapers. We have known several instances in which these remedies have been employed by corpulent people, and in some cases with the most disastrous results. They are highly poisonous compounds, which destroy the digestion; and though these means will in some cases reduce fat, it is at the fearful expense of ruining the con-

stitution. Equally to be condemned as of essentially the same nature, is the practice once common among young ladies, and we fear not yet entirely out of vogue, of eating pickles and drinking vinegar for the purpose of exchanging a healthy plumpness for a slender form. Much more might be said, and perhaps with profit, but the limitations of our space forbid us to dwell upon this subject longer.

SCROFULA, OR KING'S EVIL.

SYMPTOMS.—Skin eruptions, particularly about the head and face; enlarged lymphatics, especially those of the neck; nasal catarrh; thickened upper lip; discharges from the ears; enlarged tonsils; inflammation of the eyelids; capricious appetite; disease of the joints and bones.

Scrofula is a disease common to all countries, and in some one of its many forms of manifestation it is probably more common than any other constitutional disorder. According to careful estimates, twenty-four per cent of the inhabitants of England are affected by this disease. The name scrofula is supposed to have been derived from the fact that the hog, *sus scrofa*, frequently presents enlarged lymphatic glands similar to those observed in this affection, or perhaps from the fancied facial resemblance to the hog produced by the thickened glands and upper lip and enlarged neck which are exhibited in many cases of this disease. The first symptoms of the disease most frequently appear between the ages of five and seven years, though they may appear at any period of life from early infancy to old age. Not infrequently the disease appears in early childhood and disappears at puberty, though in many cases the period of puberty is marked by a decided increase in the activity of the disease, or the appearance of tuberculosis or consumption as a complication, or, perhaps, as another development of the constitutional affection. Until recent times, scrofula has been regarded as a blood disease, but modern researches have shown it to be a depraved condition of the nutritive processes, the exact character of which remains to be demonstrated. That it is closely allied to consumption and some other constitutional affections, is, however, clearly proven. Eruptions on the skin, especially about the face and head, are among the earliest symptoms of the disease. Severe nasal catarrh, accompanied with a profuse and thick discharge of an irritating character, is also one of the earlier symptoms in many cases. In consequence of the irritating effects of the catarrhal discharge, the nostrils and upper lip become much thickened and enlarged. Next appear enlarged lymphatic glands and enlargement of the throat, com-

ing on rapidly or by almost imperceptible degrees, most frequently involving the glands of the neck, sometimes those of other parts of the body. Discharge from the external ear, sore eyes, enlarged tonsils, and other morbid conditions mentioned under the head of symptoms, are all noticed in marked cases of the disease, so that it is by no means difficult to distinguish.

The term scrofula has, however, been much abused, not only by unprofessional people, but also by physicians, being charged with nearly all the ills to which human flesh is heir. It is the fashion with many persons, and not a few physicians, to attribute almost every obscure affection, especially those of children, to this disease. This fashion has, perhaps, arisen from the fact that, in different cases of this disease, disturbances are produced in nearly every organ and function of the body. In surgery especially, it has been the custom to attribute nearly all diseases of the joints and bones which occur in childhood to scrofulous infection, but we believe it has been clearly shown by Dr. Sayre and other eminent observers, that in a large share of the so-called scrofulous diseases of the joints and bones, some mechanical injury has been the real starting-point of the disease. No doubt in many of these cases the injury might not have resulted in serious disease had it not been for the constitutional tendency to scrofula; and yet if the injury had not occurred, very likely the disease would not have been manifested in the particular manner observed, if, indeed, it had not remained dormant altogether. When the disease has been well marked in infancy, and does not disappear at puberty, it is very likely to continue, progressively increasing and gradually undermining the constitution. The majority of scrofulous persons finally die of consumption. As has been before remarked, there has been traced a distinct connection between these two diseases, although it should not be supposed that a scrofulous person must necessarily die of pulmonary disease.

Respecting the real nature of the disease, it should be said that the results of the most thorough researches upon the subject seem to show that it consists rather in a peculiar susceptibility of the system to the morbid influence of disease-producing agents from without. This abnormal vulnerability, as the morbid condition may be called, is especially manifested in the lymphatic glands, the affection of which, so characteristic of this disease, is supposed to arise from their absorption of irritating matters from the exterior of the body, as the reception of germs or the absorption of morbid matter from a diseased skin.

Causes.—Among the causes of scrofula should be placed first, hereditary predisposition; not that the disease itself may be inherited, as is generally supposed, but, as is the case with nearly all hereditary affections, there is a transmission from parent to child of a susceptibility to morbid influences by which this disease is characterized. It is probable that in a large share of the cases of scrofula, the disease is simply the result of development, through favoring circumstances, of tendencies inherited from consumptive or scrofulous parents. We believe, however, that the influence of a bad hygienic condition has been clearly shown to be so active an agent in producing this disease, and in developing an inherited tendency to it, that we may be justified in charging bad hygiene with by far the greatest number of cases of scrofulous disease. Among the most important errors in diet are those appearing in early infancy. Of this sort should be mentioned the feeding of children upon food not suited to their condition, such as vegetables and farinaceous articles, and particularly the evil custom in some countries, especially Sweden and Germany, of allowing young children to imitate the example of their parents in drinking coffee and beer. It has also been shown by evidence which is entirely worthy of credence, that scrofula, as well as consumption, is very often produced in human beings, especially children, through the medium of milk. A child may imbibe a scrofulous taint through being nursed by a scrofulous or consumptive mother or wet-nurse. The testimony is equally clear that this disease is not infrequently produced by milk from scrofulous or consumptive cows. That scrofula is by no means an uncommon disease in cows, has been clearly shown by the demonstration that the affection known as *pearl* disease among cows and other live stock, is identical with scrofula and other tuberculous affections. Some idea of the prevalence of this disease among cows may be gained from the statement of an eminent physician who asserts that at least fifty per cent of the live stock of Hanover, Germany, is affected with pearl disease, or scrofula.

The production of scrofula has also been attributed to the use of potatoes, starchy vegetables, and other farinaceous articles of food. This error has prevailed so extensively in some countries that it has become the fashion for mothers to prohibit the use of vegetables, particularly potatoes, to their children; and as a German medical writer has said, "Many a poor child has been sent hungry to bed while its anxious mother passed a sleepless night in consequence of the discovery that it had eaten a potato." Scientific investigation has

shown, however, that in this case, as well as with many popular notions of the same sort, there is no real foundation either in theory or in reliable experience. We believe, however, it can be clearly shown that the large use of animal food, especially the use, as food, of animals in which scrofulous disease has been developed by confinement in stalls or close pens for the purpose of fattening, is one of the most serious dietetic causes of scrofula. Experiments have shown that the flesh, as well as the milk, of tuberculous or consumptive animals, will give rise to scrofula or consumption when eaten, even if cooked with a moderate heat. This being the case, how can we resist the conclusion that the use, as food, of the flesh of animals which have been fattened under conditions the best calculated to produce scrofulous disease, and the carcasses of which, in a large number of cases, show the actual anatomical changes resulting from scrofula, and especially the use of the flesh of the hog, which is known to be almost universally affected more or less intensely with scrofulous infection, must be among the most active and wide-spread causes of this almost universal malady? We are firmly convinced, not only by theoretical reasoning, but from practical observations, that of all dietetic errors, the use of swine's flesh is the most active cause of scrofulous disease.

We should not omit to mention, however, that eating between meals, the use of pastry, candy, sweetmeats, and tidbits of all sorts, is also a prolific cause, not only in producing scrofula, but in developing scrofulous tendencies which might otherwise remain latent. Bad air, arising from overcrowding, deficient ventilation of living-rooms, sleeping apartments, and school-houses, must also be mentioned as a prolific cause of scrofula. If, as has been frequently shown by careful investigations of the subject, scrofula is, in some degree at least, an infectious disease, being communicable by means of diseased particles thrown off from the lungs by respiration, it will readily be seen that the crowding together of large numbers of children, quite a large percentage of whom must in all cases be suffering more or less with scrofulous affections, must be in the highest degree dangerous.

Uncleanliness of the skin, through want of frequent bathing, must also be a very common cause of this affection, or at least of the development of pre-existing scrofulous tendencies on account of increasing the liability to diseases of the skin. Certain diseases, as measles, scarlatina, diphtheria, typhoid fever, small-pox, and other affections of a grave character, frequently occasion the development of this disease.

It has also been shown that vaccination is not infrequently the means of inducing, or at least developing, scrofulous affections. There is good reason for believing that vaccine virus may be the means of communicating the scrofulous taint to the person vaccinated when it has been obtained from either a child or a calf suffering from scrofulous disease.

It has been generally supposed that persons of a sanguine temperament, or those having light complexions, blue eyes, and light hair, are particularly liable to scrofula, and even that the peculiarities of the temperament mentioned are indications of a scrofulous tendency. It has been shown, however, by Phillips, from a careful collection of statistics, that this popular theory of disease is erroneous, and that persons of the very opposite temperament and characteristics from those named, are equally liable to the disease. Thus it will be seen that it is almost impossible to predict the occurrence of scrofula, before it has made its appearance, by any personal peculiarity. Indeed, the only basis upon which the probable occurrence of scrofula can be predicted is that of known hereditary predisposition. It is contended, however, by those who have had the most experience in the treatment of this affection, that there is a distinct "scrofulous habit," of which there are said to be two varieties. The first, or irritable form, according to Dr. Birch-Hirschfeld, the eminent author of an able article on scrofula in Ziemssen's Encyclopedia of Medicine, is characterized by a delicate frame of body, deficient muscular development, thin skin inclined to bluish tint, with transparent veins especially in the temporal region and on the eyelid, soft hair, mostly of a light color, blue, lustrous eyes with a dilated pupil, irritable temper, "and sexual and intellectual precocity." The same author describes the second, or torpid form of scrofula as characterized by a burly frame of body, bloated appearance, richly developed adipose tissue, and muscles incapable of great exertion. The head is large, the physiognomy becomes heavy and unpleasant by the thickness of the upper lip, the broad jaws, and short, thick neck. The psychological character is distinguished by a sluggish, phlegmatic disposition and deficient development. Between these two typical classes there lie, of course, all the intermediate forms of disease.

Treatment.—As remarked with reference to diseases of nutrition, the adoption of measures for the prevention of this disease or the development of the hereditary predisposition to it, is of the first importance.

The most effective measures of prevention would be some means of preventing the marriage of persons of scrofulous tendencies. The intermarriage of families with a well-marked scrofulous tendency, should be regarded as a culpable transgression of one of the plainest laws of nature. The children of such parents cannot escape a constitutional tendency which will surely result in an untold amount of suffering, and premature death. As this cannot be done, however, even when especial attention is called to the matter in cases in which the injunction is in the highest degree applicable, the best that can be done in most cases is to adopt such measures as will prevent the development of the inherited tendencies or the new production of scrofulous disease. The most efficient of these measures will of course be a careful avoidance of all exciting causes of scrofula, to which attention has already been called.

Where there is the slightest ground for suspicion of the inherited scrofulous constitution, preventive measures should begin with the very earliest period of infant life. The greatest pains should be taken to secure for the child proper food. The natural food of infants is milk, and this should be given until the period arrives when the development of the teeth indicates the propriety of adding other food to the diet. If the mother is consumptive, or has at any period in her life manifested a scrofulous tendency, or if she is for any reason unable to supply her child with its natural food, a wet-nurse should be employed. Great care should be taken to secure for a nurse a healthy person whose family history is wholly free from scrofulous or consumptive habits. If such a nurse cannot be obtained, as is many times the case, cow's milk is the next best substitute; but care should be taken to secure milk from cows in a healthy condition. No milk should be given to the child until a careful investigation has first been made of the character of the cow from which it is obtained, the condition under which it is kept, the character of the food, etc. Candy, and things of a like character, with which the friends of the little ones often supply them to their hurt, should be wholly interdicted. Excessive feeding should also be avoided, as scrofulous children often have a voracious appetite, and it is of the greatest importance that the digestive organs should be preserved in a healthy condition. Children should be very early accustomed to an abundance of fresh, pure air. Even when a very few weeks old, they should be taken out of doors and exposed to the fresh air and sunshine, in a moderate way of course, at first, and should sleep in rooms which are thoroughly ventilated, and not too warm, never being exposed for any length of time to a temperature above 70°.

The eminent German author whose name has already been mentioned in connection with this subject, recommends very highly the employment of cold sponging, which he insists should be begun very early and practiced daily. We suggest, however, that it is unnecessary to submit infants to so disagreeable a process as that of daily sponging with cold water, as all of the beneficial effects can be obtained by water which is only a few degrees less than the normal temperature. In general, it will not be necessary to employ water of a lower temperature than 80° or 90°, and it is best to begin with lukewarm water, making it gradually cooler from day to day. By this process the skin will be fortified against the invasion of the irritating elements which are supposed, as we have intimated, to produce scrofula and to develop any latent scrofulous tendencies. As soon as the child is of sufficient age, moderate exercise in the open air should be secured. It should be dressed in such a manner as to secure thorough protection of the entire body, so as to maintain the equilibrium of the circulation, and then be allowed to play in the open air as much as possible—several hours a day at least. Too warm clothing, and especially too warm covering at night, should be avoided, as by this means the system is rendered susceptible to climatic and atmospheric changes which have a marked influence in exciting scrofulous affections. The measures of prevention suggested should also be employed in all cases in which the symptoms of the disease are already present, as they are equally efficient when applied as curative measures as when applied for prevention.

In the medicinal treatment of scrofula, nearly every remedy in the materia medica has at one time or another been recommended and highly extolled as a specific. Each remedy, however, has in its turn fallen into disrepute and been replaced by others of a different nature, and, indeed, of an entirely opposite character. Even remedies which appeal to the imagination alone have been used, and with marked success. One of the most popular remedies of this sort was the touch of the king's hand, which was supposed to expel the disease and from which this malady acquired the name "king's evil." Quacks have fattened on the sale of anti-scrofulous and blood-purifying mixtures which had no effect upon the user except to render the blood still more impure and render the constitution less able to institute a successful remedial process.

In modern times the remedy which has been most lauded for the cure of scrofula is cod-liver oil. This remedy is the oil obtained from

the livers of codfish. The only way in which it differs from other fish or animal oils is the admixture with it, as an impurity, of considerable quantities of bile expressed from the liver. This remedy was first employed in Holland and in Northern Germany for rheumatism more than half a century ago. By accident it was first introduced as a domestic remedy for scrofula, and has by degrees attained to the eminence of being considered as the most potent of all drug remedies for this disease. That it is by no means a specific, however, is readily admitted by all who have had a large experience in its use and have studied its effects intelligently. Prof. Niemeyer well remarks that in many cases of scrofula, cod-liver oil "is absolutely pernicious." Iodine in some one of its numerous combinations is still employed by the great majority of physicians in all cases of scrofula, but it has long been abandoned by the most advanced and scientific members of the profession as a remedy of no practical value in the treatment of this disease. Even those who recommend cod-liver oil do not pretend to employ it as a curative agent, but simply as a means of counteracting the tendency to emaciation and deficient nutrition by which one class of cases is characterized. One of the most enthusiastic advocates of its use asserts that "no remedy has ever been so much abused as this one."

In the rational treatment of this affection it is of primary importance that the principle should ever be kept in mind that the patient is to be treated, and not the disease from which he is suffering. If a cure is effected it must be through the wonder-working operations of nature, and not through the agency of any drug or other remedy administered to the patient. Hence it will of course be utterly useless to attempt to apply any routine method of treatment to all cases of this disease. Indeed, it is essential to success that the most careful discrimination should be made in the treatment of different cases. It will be far better to do nothing more than to surround the patient with the most favorable hygienic conditions than to apply active measures of treatment not suited to his case. As a general principle of treatment, however, it may be said that the two varieties of scrofulous habit denominated as irritable and torpid, require the application of nearly opposite remedies in order to obtain good results.

In the first, or irritable class of cases, in which the patient is usually thin, inclined to be anæmic, and evidently suffering from deficient nutrition through imperfect assimilation of food and excessive waste, such measures should be adopted as will improve the energy and char-

acter of the nutritive processes. Care should be taken to supply the patient with an abundance of the most wholesome, simple, and easily digestible food, although equal care should be taken to avoid excessive feeding. All reducing measures should be avoided. Daily sun-baths, frequent inunctions with vegetable oil, tepid sponge baths daily or every other day, and, if possible, the tonic application of electricity, are especially indicated. If there is a feverish condition of the system, meat should be wholly avoided and the dietary of the patient should consist principally of fruits and farinaceous articles. Milk obtained from cows known to be healthy may be freely employed. The diet should in all cases be unstimulating and free from condiments and other irritating substances. Tea and coffee should be wholly abstained from. Acorn coffee may be used to advantage as a harmless substitute for these beverages, and one with which experience has seemed to connect some degree of remedial virtue.

For the opposite class of cases, those in which there is evident torpidity of the system, inactivity of the excretory functions, and retained excretions, the same measures of treatment should be employed, but in addition more or less active eliminative treatment should be used, according to the requirements of the case. The German authorities recommend the wet-sheet pack and frequent cold bathing, the use of which is especially advocated by Schroth. We recommend caution, however, in the use of this active measure of treatment. We much prefer to employ such mild measures as the vapor or hot-air bath, administered at as low a temperature as will produce sweating, the warm full bath, and the electric bath. The pack may be employed occasionally, however, with benefit, but should never be administered cold, as it is usually employed in Germany. With reference to the use of water in these cases, the eminent Dr. Niemeyer remarks as follows: "In recent times the cold-water cure has earned for itself the most favorable reputation as a remedy for scrofula, and, indeed, a series of cases is on
rd in which complete and perfect cures have been obtained by this
after all other modes of treatment had been applied in vain.
certainly justified in asserting that cod-liver oil treatment can-
substituted for the water-cure."

w remarks should be made in this connection respecting the
of local affections incident to this disease. Scrofulous skin
ldom require in addition to the measures of treatment
application of other remedial measures than those neces-

sary for cleanliness, and the application of simple vaseline ointment or carbolated vaseline. For scrofulous catarrh of the nose, the nasal douche is to be recommended as a means of applying mildly astringent washes such as are recommended for milder forms of catarrh.

For scrofulous sore eyes, the continuous employment of tepid applications two or three times a day will usually secure recovery after a time. For chronic discharges from the ears, a carbolic acid lotion composed of one part carbolic acid to three of glycerine or alcohol, and fifty of water, should be employed two or three times a day in the form of a douche, the mode of application of which is elsewhere described. A solution of permanganate of potash, consisting of a tablespoonful of the crystals dissolved in a quart of warm water, is a most successful remedy in some cases. With reference to the treatment of enlarged glands, Dr. Birch-Hirschfeld remarks as follows: "The application of the cold douche to scrofulous humors of the glands has in our experience several times produced a favorable result. Obstinate tumors of this kind, which have resisted all kinds of salves and plasters, disappear sometimes under the continued application of cold water." Much more certain results can be obtained by the application of the alternate hot and cold douche, as by this means we are able to intensify the effect of both agents, which, when employed separately, are very efficient in causing the disappearance of abnormal growths.

The bronchitis of scrofula, to which the person suffering from the irritable variety is chiefly subject, should receive the most prompt attention as soon as its presence is discovered, as by this means it is possible to prevent the fatal consumption to which sufferers from this form of scrofula are especially liable. The same importance is attached to the prompt and persistent treatment of derangements of digestion, which have a decided tendency to the production of mesenteric consumption.

We have dwelt thus at length upon this subject on account of its great importance as well as the great prevalence of erroneous views concerning it. Much more remains to be said concerning the numerous local affections which are connected with this disease; but this part of the subject can very well be left for consideration in the sections devoted to the several local diseases.

HEMORRHAGIC DIATHESIS, OR HÆMOPHILIA.

SYMPTOM.—Persistent bleeding occasioned by a slight cut, puncture, or laceration of the skin.

This is a peculiar affection, the exact nature of which is not known.

It is, however, known to be of an hereditary character, whole families frequently being affected by it, and the condition often being transmitted through several generations. A person who is affected by this constitutional tendency to hemorrhage, in common parlance termed a "bleeder," is liable to death occasioned by even the slightest injury The extraction of a tooth or a small cut may give rise to such persistent and irrepressible bleeding that the patient's life may be drained away in the course of a few days. Most patients suffering with this affection die young, very few surviving childhood. If, however, the patient lives to old age, as is sometimes the case, the tendency to hemorrhage diminishes, and may often disappear altogether.

Treatment.—There is no known remedy by which the constitutional tendency may be removed. Consequently, preventive measures are by far the most important. These consist almost exclusively in protecting the individual afflicted by this disease from the occurrence of accidents of a character calculated to excite hemorrhage Such persons should not be allowed to use tea or coffee or other hot drinks, on account of their relaxing effects. The most effective remedies for hemorrhage when it occurs are prolonged and steady pressure, and cauterization with a heated iron. All other means should be tried, however, in conjunction with this.

SCURVY.

SYMPTOMS.—Great debility; lassitude; mental depression; sunken eyes; pain in the limbs and joints; pallor; livid lips; sore mouth; bleeding gums; blood spots in the skin, nosebleed; hemorrhage from the lungs and bowels; shortness of breath; scurvy condition of the skin.

This long list of symptoms by no means includes all of the morbid conditions observable in this disease. As they are the leading symptoms, however, we need not increase the length of the enumeration. The disease is usually of a chronic character, the condition of the patient becoming successively worse so long as the disease continues, finally resulting in the inflammation of the internal organs, particularly the pericardium and pleura Dropsy of the chest is also frequently produced. The patient finally dies from exhaustion and general dropsy, inflammation of some one of the internal organs, or hemorrhage from the bowels.

Causes.—Scurvy is usually attributed to the restriction for a long time to salt meat and bread without fresh vegetables. So many cases have been observed which have been produced from other causes, that salt is

no longer considered as the only agent in causing the disease. It has been known to break out with very great virulence in consequence of exposure to cold, especially to cold and wet, and also from prolonged exposure to heat. It has also been known to occur in consequence of great exhaustion, prolonged melancholy, and similar causes. In northern countries, particularly Russia, a form of disease known as land scurvy is common among people who live in cold, damp cellars, and are destitute of the comforts of life. An eminent English physician has lately called attention to the fact that scurvy is not infrequently produced in women of the lower classes in some parts of England in consequence of the use of tea. It thus appears that this disease may be produced by the gross neglect of almost any principle of the laws of hygiene.

Treatment.—About all that is required to be done in the treatment of this disease is to adopt such measures as are useful in its prevention, that is, to place the patient under good hygienic conditions. Sailors and others who have been long confined to the use of salt meat, and deprived of vegetables, should have an abundant supply of fresh vegetables, particularly cabbage, potatoes, and articles of this class. Fresh fruits are equally valuable. Lemons, oranges, and other sour fruits, are also of special service. Those in whom the disease is due to the use of tea and other stimulants should of course abandon the use of the harmful agents at once, and adopt a rational dietary. It is a remarkable fact that immediately upon the removal of the causes of scurvy, the person suffering from this formidable disease begins to show evidences of improvement, and in course of time is almost certain to recover, although suffering from the disease in its most severe form.

DIABETES MELLITUS, OR TRUE DIABETES.

SYMPTOMS.—Excessive quantity of urine containing sugar; emaciation; great thirst; dryness of the skin; voracious appetite.

The characteristic feature of this disease is the discharge of enormous quantities of pale urine containing sugar. As much as five or ten quarts of pale, sweetish urine is sometimes discharged in a single day. The presence of sugar in the urine may be demonstrated by the taste, or by means of chemical tests. The latter means is of course the most reliable. The test is so simple that almost any one can apply it. Place in a small test-tube or vial two or three teaspoonfuls of the urine to be tested, and

add about an equal quantity of a strong solution of caustic potash. Now add a strong solution of sulphate of copper drop by drop until the blue coagulum or precipitate which is formed is no longer dissolved. Then heat to the boiling point. If sugar is present the blue color will be changed to yellow or orange.

All the symptoms mentioned follow each other as the disease advances. The patient finally dies from exhaustion, or from inflammation of the bones or of some internal organ, which is very apt to occur. In many cases the patient dies of consumption or inflammation of the lungs. The disease usually lasts from one to three years, though under favorable circumstances it may continue for a much longer time. This disease has generally been considered under the head of diseases of the kidneys, but as it is now well known that the sugar found in the urine is not produced by the kidneys, and that whatever is the seat of the disease, the kidneys are not directly involved, it is evidently excluded from diseases of the urinary organs.

Causes.—Little is known concerning the real cause of diabetes, and still less satisfactory is the knowledge which we possess respecting the real seat of this disease, notwithstanding the numerous experiments upon animals and almost numberless observations of human beings which have been made with direct reference to the pathology of the disease. It has been quite well established, however, that the most frequent causes of this malady are exposure to cold and wet, physical violence, concussions of the whole body, injuries to the brain and nervous system, mental exhaustion, gluttony, and especially the use of large quantities of sugar. It is probable that dietetic errors are the principal cause of this disease. It has been claimed that diabetes is the result of the use of an exclusively vegetable diet. That this is not the case, however, is clearly shown by the fact that the disease is no more frequent among the majority of nations which subsist almost wholly upon vegetable food than among those that employ diet of the opposite character. A strong argument against this theory is also found in the fact that, in the numerous dietetic experiments which have been made upon animals and human beings in which they have been required to subsist for long periods of time upon a purely vegetable diet, this disease has never been produced. On the other hand, the eminent Dr. Berrenger-Ferroud has given an account of the occurrence of diabetes in an ape, in which he claimed that the only cause of the disease was the attempt to accustom the animal to the addition of

a proportion of animal food to his natural diet of fruits and grains. Numerous experiments, however, have shown that when large quantities of sugar are taken into the system, sugar may be found in the urine after a few hours. There is some evidence also to believe that a predisposition to the disease is hereditary. It has been most frequently observed in females.

Treatment.—All physicians of experience are agreed that in the treatment of this disease by far the most important measure is the regulation of the diet. Sugar, starch, and all foods containing them, should be, as far as possible, excluded from the dietary. This requires that the patient should abstain from the use of sugar in any form, from bread, potatoes, peas, beans, rice, oat-meal, corn-meal, and other grains, chestnuts, and all other farinaceous articles of food. Sweet fruits also must be avoided with equal care. The diet should consist chiefly of meat of different kinds, including fowl. Greens, green beans, lettuce, yellow beets, asparagus, cucumbers, and radishes may also be eaten. Most acid fruits may be taken in moderate quantities, such as lemons, oranges, strawberries, peaches, and currants. In many cases skim-milk, sour milk, or buttermilk may be taken without increasing the proportion of sugar, and hence without injury. Several eminent physicians claim to have cured a number of cases of this disease by means of an exclusive milk diet, the patient being confined to this one article of food for several weeks. The milk should be carefully skimmed. The quantity required per day is from two to three quarts. By the employment of a diet free from sugar or starch, sugar may in many cases be made to disappear from the urine. When this is the case it may be looked upon as a very favorable indication, and often so long as the patient continues to abstain from those kinds of food which occasion the production of sugar the disease will be held in check.

In many cases, however, the disease does not yield to a restriction of the diet. For this class of cases nothing can be done except to confine the patient to a flesh diet. This can be done but for a short time, however, on account of the great repugnance to meat which will be developed and the derangement of digestion which will result from so large a quantity of animal food. On this account, cases of this sort seldom derive much benefit from treatment. The patient suffers most from being deprived of bread, and this article of food should not be wholly interdicted. The patient should not, however, be allowed to

eat fine-flour bread, as this combines a very large portion of starch with little nutritive value. The bread eaten should consist of as large a proportion as possible of the nitrogenous elements with the smallest possible amount of starch. There are various formulas for making what is termed diabetic bread. That which is most effective in restraining the production of sugar is made of bran which has been washed several times, and after being dried is made into a sort of bread with butter and eggs. This, however, is very difficult of digestion, and often contains so little nutritive value that the patient will derive very little benefit from its use. Much better bread is that re-ommended by the eminent Dr. Pavy of England, which is made from almonds. The directions for making this bread will be found under the head "Diabetic Bread" in the section on "Medical Dietetics." Iceland moss may also be advantageously used for bread, being made into cakes with milk and eggs. Its use does not increase the pr d c of sugar. The best of all breads for patients suffering with diab is made from gluten flour, which can generally be obtained of gists.

It is a good plan in the dietetic treatment of diabetic pa follow the method suggested with reference to the dietetic tr obesity; namely, to employ a strict diet for several days or tw weeks, and then allow the patient to take a little more liber few days, so that the appetite may not be so greatly impai much decrease of the patient's strength. A diabetic pat be deprived of fluids, but should be cautioned to control drink within as reasonable limits as possible, and especially quantities of fluid at a time. The intolerable thirst will moved by holding bits of ice in the mouth. The gr from the body is not the result of excessive drink the great thirst, which is simply an expression of the lack of water in the blood. Th by which this disease is characterized as as is the thirst experienced in health

In addition to the dietetic t be done in many cases is t and maintaining a general the full understanding, h of persons suffering fr igate the symptoms a

manent cure rarely occurs. The plan of treatment which we have adopted in the management of cases of this class has been substantially the following, with such modifications as are indicated by peculiarities of temperament, general condition, etc.:—

A short warm bath should be taken two or three times a week, with inunctions of olive-oil or cocoa-nut oil every other day. Sun-baths should be taken daily when possible. The use of faradic electricity as a tonic, and the application of galvanism to the spine, is attended with much benefit. The patient should also be required to take a large amount of exercise in the open air, horseback riding, walking, etc, in addition to the daily practice of calisthenics. The results obtained by this mode of treatment have been very encouraging, and in some cases very remarkable. Persons in whom several years ago the disease was well marked are still alive and enjoying comfortable health, though they still find it necessary to observe great care in diet in order to prevent a recurrence of the disease. In some cases, special benefit has seemed to be derived from a strong current of galvanism applied to the base of the brain and the sympathetic nerve, when no apparent effect could be obtained in any other way. Although numerous drugs have been at times highly recommended for the relief of this disease, it is generally considered that few, if any, have any effect upon it except by impairing the patient's nutrition, and thus producing a diminution of sugar by depressing his vitality. It need not be said that the injury done by remedies of this class must be much greater than any possible good which can result from their use. Morphia exercises more influence over the production of sugar than any other known drug, but at the same time interferes with the nutrition of the patient, so that its employment cannot be considered in any way as a curative measure. The want of success in the treatment of this disease may be in part attributed to the lack of knowledge respecting its real nature, which still continues, notwithstanding the numerous investigations of the subject. It is to be hoped that when the causes and character of the disease are better known, more successful remedial measures may be discovered.

In conclusion, we would call attention to the fact that a sudden and very great decrease in the amount of urine should be regarded as of unfavorable import when it cannot be fairly attributed to treatment. This fact is well illustrated by the following case, observed while this work was in press: We were suddenly called by telegram to see a patient in consultation at a distance who had suffered for several years from

diabetes, passing about two gallons of urine daily. We found the patient in a state of unconsciousness, the pupils widely dilated, pulse barely perceptible, in which condition she had been for about thirty hours. Upon inquiring into the history of the case we found that three or four days previously she had had a severe ague chill, since which time she had been rapidly failing until she had reached the condition in which we found her. Upon making inquiry of her medical attendant concerning the condition of her bladder and the amount of secretion, we found that within the last thirty-six hours not more than thirty ounces had been formed, which was less than one-tenth of the usual quantity. The other nine-tenths, of course, which remained in her system, had so poisoned the nerve centers as to bring the patient into the comatose condition in which we found her. The patient, finding the quantity of urine about that usual in health, had not compared it with the amount she had been habitually secreting up to the time of her sickness, and hence had failed to discover the real cause of the sudden change in symptoms. In a case of this kind the treatment suggested should be applied promptly and thoroughly, namely, alternate hot and cold applications to the small of the back over the kidneys, and packing the patient with hot bottles, bricks, etc., to induce profuse perspiration. The patient should also be given hot teas, or warm drinks of other kinds in abundance, so as to encourage the sweating process. By this means the poison may be eliminated from the blood, and life maintained until the kidneys become able to resume their functions.

DIABETES INSIPIDIS.

SYMPTOM.—Gradually increased quantity of pale urine, free from sugar.

Almost the sole symptom of this disease is that mentioned. The urine differs from that of diabetes mellitus in being entirely free from sugar. The amount of urine produced by patients suffering from this disease is almost incredible. The usual quantity is from three to ten quarts, and cases are recorded in which so large an amount as between ten and eleven gallons has been produced in twenty-four hours. This disease is generally regarded as one of the mildest from which a person may suffer. It gives rise to no marked disturbances of the system, and has, in some instances, been tolerated without seeming injury to the system for fifty years.

Causes.—In addition to the hereditary predisposition to the disease the most frequently observed causes are injuries to the spine, chronic dis-

eases of the brain and spinal cord, violent emotions or excessive physical exertion, the use of alcohol, and the drinking of large quantities of cold liquids. The prominent symptom of the disease is now generally believed to be due to derangement of some part of the nervous system, probably of certain nerve-centers located in the base of the brain.

Treatment.—M. Bauchardot of Paris, an eminent French physician, states that hygienic treatment is essential to success in the management of cases of this disease. All the habits of the patient should be regulated strictly in accordance with the laws of hygiene. Exercise should be taken regularly and to as great an extent as admissible from the strength of the patient. Warm clothing should be worn and great care should be taken to prevent chilliness. The diet should be simple and wholesome. Stimulating condiments of all sorts should be carefully avoided. Fruits and grains constitute the best diet for patients suffering with this disease. Nearly all fruits, grains, and vegetables may be eaten without injury with the exception of tomatoes, which should be avoided. The use of asparagus and beans should also be interdicted when pain in the region of the kidneys or a deposit in the urine is observed after eating them. Tea, coffee, chocolate, alcoholic beverages, and all other stimulating drinks, must be wholly discarded. Fluids should be taken in as limited quantities as possible to avoid too great suffering on the part of the patient. Iced-water, ices, and all cold drinks, should be discarded. It is better to take fluids warm in this disease, as by this means the action of the skin will be encouraged and that of the kidneys lessened. Hot lemonade taken with very little sugar is an excellent means of allaying the very severe thirst present in this disease. Such remedial measures should be employed as will induce energetic action of the skin. For this purpose a sponge bath followed by vigorous rubbing, or the rubbing wet-sheet, should be taken daily. In severe cases, a pack, the Turkish, hot-air, or vapor bath should be taken once or twice a week, and may be employed even oftener than this if the patient is under careful medical supervision and is wholly devoted to treatment. Dr. Gurltz, an eminent German physician, highly recommends the use of galvanism applied to the spine and especially to the region of the kidneys. Sun-baths, friction of the surface of the skin with the dry hand, a woolen cloth, or soft flesh-brush, and all other means for increasing the activity of the skin and thus lessening the work imposed upon the kidneys, should be employed.

DISEASES OF THE DIGESTIVE ORGANS.

We will next notice diseases which affect the digestive organs, and which may be regarded as the most frequent of all diseases to which the body is subject. Under this head will be noticed diseases of the mouth, pharynx, gullet, œsophagus, stomach, and intestines.

DISEASES OF THE MOUTH.

CATARRH OF THE MOUTH.

SYMPTOMS.—ACUTE: *Burning; tenderness; mucous membrane dark red, dry, or covered with copious secretion; swelling of membrane of cheeks and tongue; coated tongue; perverted taste; elongated palate.*

CHRONIC: *Membrane swollen, showing small nodules; thick yellow mucus on gums and teeth; velvety coat on tongue; foul and slimy taste in mouth.*

This is a disease, which, although of very frequent occurrence, has been only recently recognized as of a catarrhal character. Catarrh of the mouth is very similar to the same disease elsewhere, and the mouth is even more liable to the disease than other parts. It is often associated with catarrh in other organs, as pharyngeal and nasal catarrh, and catarrh of the stomach. It is also a very common accompaniment of various fevers. It is not dangerous to life, though in small children it may give rise to convulsions which may prove fatal when arising from this as well as when produced by other causes of reflex irritation. It should not be supposed that all persons having a coated tongue and a bad taste in the mouth have oral catarrh. Either fevers or deranged digestion produces these symptoms. There must be also increased secretion of turbid or yellowish mucus, tenderness and swelling of the membrane, giving to the tongue a flabby appearance in consequence of which condition the impressions of the teeth will be seen in the edges. The difference between chronic oral catarrh and a similar condition produced by dyspepsia is that in oral catarrh proper the digestion is not at all disturbed. The two diseases may exist together, however. The elongation of the uvula gives rise to constant hawking, coughing, and spitting, by tickling the root of the tongue.

Causes.—The chief causes of catarrh of the mouth are cutting the teeth, gum-boils, rough or ulcerated teeth, wounds of the mouth or

gums, very hot, cold, or irritating foods or drinks, smoking and chewing tobacco, mercurial poisoning, catarrh of some other organ, as gastric catarrh, typhoid and typhus fever, and scarlatina. Sitting up late at night and mental excitement are also given as causes by eminent German observers.

Treatment.—Remove causes of irritation. In cases caused by difficult teething, more harm than good is done by lancing. Use soothing lotions when there is much irritation, as slippery-elm and flaxseed tea, and rinse the mouth often with cool water. Avoid all hot drinks. The disease will usually speedily disappear when the cause is removed. When obstinate in the chronic form, rinse the mouth morning and night with solution of carbonate of soda, a dram to the pint of soft water, or simple cool water. Cleanse the teeth and mouth thoroughly after each meal and before going to bed. If there is foul breath, use a weak solution of chlorinated soda as a gargle morning and night. For clamminess, chew a little piece of rhubarb just before retiring. It should be chewed some time, as its effects are wholly local.

APHTHÆ.

SYMPTOMS.—Catarrh of the mouth; small white spots with red border on mucous membrane; great increase of saliva; fetid breath.

This affection is often called ulcerated sore mouth and thrush, but differs from both. When it occurs in a severe form, as it often does in young children, it is usually preceded by a slight fever and restlessness for several days, loss of appetite, and symptoms of catarrh of the mouth. When the other symptoms mentioned appear, there is considerable pain, and the patient, if an infant, finds difficulty in nursing in consequence.

Causes.—The disease is most frequent in infants, the chief causes being cutting of teeth and disturbances of digestion. Aphthæ also occurs in measles and canker sore mouth. Adults often suffer with the disease in a mild form in consequence of disturbances of digestion.

Treatment.—The mouth should be washed three or four times a day with a saturated solution of chlorate of potash. In addition to removal of the exciting causes, this is the only remedy required in most cases. If not successful, touch the white spots with strong solution of nitrate of silver by means of a camel's-hair brush.

CANCRUM ORIS, DIPHTHERITIC INFLAMMATION OF THE MOUTH, OR CANKER OF THE MOUTH.

SYMPTOMS.—Gums red, swollen, bleed easily; whitish spots on mucous membrane, which cannot be wiped off, appearing first on gums; unhealthy ulcers; teeth loosened; lymphatic glands swollen and painful; lips and cheeks swollen; copious saliva, often bloody; pain in drinking or swallowing; foul breath; slight fever.

The above symptoms are usually accompanied with those of catarrh of the mouth and aphthæ. The unhealthy ulcers referred to are produced by the sloughing away of the discolored membrane. Notwithstanding the serious character of the disease, recovery usually occurs, even though the disease may continue for weeks or even months.

Causes.—The most common cause of the disease in infants, in whom it most frequently occurs, is unhygienic conditions, bad food, bad air, etc. In them it is often accompanied by serious disturbance of digestion, which may justly be regarded in the light of a cause of the disease. It is common in foundling-hospitals. The most common cause in adults is the use of mercury, which produces the most painful and obstinate form of the disease.

Treatment.—Give first attention to the causes of the malady. Secure good hygiene, and regulate the diet so as to improve the digestion. Use chlorate of potash lotion three or four times a day, and rinse the mouth with cold water very frequently. Under this treatment the ulcers will soon begin to heal, and in a few days the patient will be greatly improved. It is important that infants suffering with this disease should be taken much into the fresh air and exposed to the sunlight daily. An inunction daily or every other day will greatly facilitate the cure when the patient is weakly.

ULCERS OF THE MOUTH.

In addition to the severe forms of aphthæ and ulceration previously described, small ulcers frequently appear on the tongue and mucous membrane of the cheeks. The point of the tongue is a favorite seat for small, painful vesicles which burst and become small ulcers. Follicular ulcers often occur on the mucous membrane of the lips, being occasioned by the stopping up of the ducts of glands situated in this region. The most frequent cause is disturbance of digestion or irritation of rough teeth.

Treatment.—Apply chlorate of potash lotion, and wash the mouth with cool water several times a day, refraining from all hot foods and

drinks. If necessary, touch the ulcers with nitrate of silver solution, ten grains to the ounce of water.

THRUSH, OR MUGUET.

SYMPTOMS—Whitish points or a frosty coating; cheesy matter on tongue, roof of mouth and inside of lips; pain on swallowing; burning pain; disturbance of digestion, often diarrhœa.

This disease occurs in infants but a few days or weeks old, in very aged persons, and in persons much exhausted by disease, as just before death in consumption and fevers. In infants the local disease is usually accompanied by acidity of the stomach, which is probably both a cause and an effect of the local disease.

Causes.—The immediate cause of this disease is a vegetable parasitic growth known as the thrush fungus, the production of which is encouraged by lack of proper cleanliness of the mouth. If the mouth of infants is kept thoroughly clean, the disease will never occur. The mouth should always be washed out with a clean wet cloth immediately after feeding; as the remains of food left in the mouth form the best possible soil for the production of the disease. The practice of giving children sugar-teats, or little bags filled with a mixture of bread, milk, and sugar, is a most pernicious one. A more potent means of producing the disease under consideration could not be invented. An acid state of the stomach and a feeble condition of the system favor the production of the disease, probably on account of the greater liability to the accumulation of foul products in the mouth in these conditions. As the disease is probably contagious, care should be taken to isolate patients suffering from it.

Treatment.—Thorough cleansing of the mouth is of first importance. Fungi do not thrive except in the presence of filth. Wash the mouth *thoroughly*, before and after feeding, first with cool water, then with a cool solution of borax or sulphite of soda in the proportion of a dram to the ounce of water. Sugar, honey, and similar preparations should not be employed, as they encourage rather than cure the disease. After feeding and washing as directed, it is well to apply a mixture of powdered borax and glycerine in the proportion of a teaspoonful of the powdered borax to two tablespoonfuls of glycerine. Attention should of course be paid to the stomach and bowels, remedies being applied in accordance with directions given elsewhere for derangements of these organs.

INFLAMMATION OF THE TONGUE; GLOSSITIS.

SYMPTOMS.—Tongue greatly swollen, often to double its usual size, upper surface white or brownish, smooth or cracked, covered with tough mucus, under surface red, ulcers on sides of tongue; severe pain which is increased by motion, making speaking, chewing, and swallowing difficult or impossible; drooling of saliva; glands of neck enlarged; in severe cases obstruction to circulation in head, and interference with respiration; high fever and full pulse.

This is a very rare disease, seldom occurring except as the result of direct injury to the tongue, as from a burn, a caustic application, or the sting or bite of an insect. With the application of proper remedies recovery usually takes place, though in severe cases death may occur from suffocation.

Treatment.—Apply general treatment to subdue the fever, and frequent sitz baths for derivative effect. Apply ice locally, allowing the patient to hold pieces of ice in his mouth. Keep the tongue moistened with soothing lotions, as slippery-elm and flaxseed tea. If ulcers form, use chlorate of potash lotion.

In chronic inflammation of the tongue when deep cracks or fissures are formed, the use of lotions of chlorate of potash and carbolic acid, and the application of a strong solution of nitrate of silver, ten or fifteen grains to two tablespoonfuls of water, constitute the best remedies.

GANGRENOUS SORE MOUTH, OR NOMA.

This is, fortunately, a very rare disease, as it is almost always fatal. It chiefly occurs in children whose constitutions are enfeebled by bad or insufficient food, bad air, filth, or other unhygienic conditions, and, according to Niemeyer, is often caused by the use of mercury. The disease is characterized by a low form of inflammation, giving rise to extensive sloughing, or gangrene, which begins on the inside of the cheek, extends to the gums, the lips, and the tongue; exposes the bones of the jaw, causing the teeth to drop out and the separation of portions of bone. Finally the disease may extend to the face, the whole cheek and even the nose becoming black and sloughy. When recovery takes place it is very slow, the lost parts being built up by granulation. The only remedies which do any good are those which, like the actual cautery, destroy the diseased tissues and thus excite a healthy action.

SALIVATION.

SYMPTOMS.—Abnormal production of saliva; indigestion; emaciation.

This morbid condition is rather a symptom of disease than itself a disease. The amount of saliva daily produced in health is ten to twelve ounces. When the amount becomes so great as to be troublesome, escaping from the mouth, or requiring a person to spit or swallow to get rid of it, it may be said to be abnormal. Sometimes two to five quarts are produced in cases of disease.

Causes.—The causes of salivation are numerous. Anything which causes irritation of the mouth or mucous membrane of the stomach will produce it. It frequently occurs in fevers, and is produced by the cutting of the milk teeth, by decayed teeth, and especially by certain drugs, among which are all the preparations of gold, iodine, copper, lead, and particularly mercury, together with jalap, digitalis, and balsam of copaiba. Certain vegetable foods also, particularly tomatoes, sometimes occasion a slight irritation of the mucous membrane of the mouth which produces a profuse flow of saliva, and which has by some been erroneously taken as an evidence that tomatoes contain calomel, and hence should not be eaten as food. The worst form of salivation is that produced by the use of mercury. In some persons a very small quantity of this metallic poison will produce salivation; in others, a larger quantity is required. Mercury is always found in the saliva in cases of mercurial salivation, and its presence may be detected a long time after the drug has been administered. We have met persons who asserted that they had had recurrences of mercurial salivation at intervals for years after having had a "mercurial course." The eminent Dr. Wright, who devoted much time to the study of this subject, found that saliva containing mercury is inert, being so poisoned by the drug that its power to change starch into sugar is lost. This corresponds with the effect of mercury upon the bile, to which we have elsewhere called attention, and accounts for the indigestion and emaciation of patients salivated by mercury.

Treatment.—So far as mercurial salivation is concerned, the proper remedy is prevention by non-use of the drug. We believe that there is no disease or morbid condition which cannot be treated better without than with it. Dr. Vogel well demands that its use as a laxative "should be entirely done away with." As elsewhere shown, it is

worthless as a cholagogue, even if its operation as such would be in any way desirable. We have also shown that it is useless, or worse than useless, in syphilis. What is it good for? and if it were useful for any purpose, should not the fact that it may do so much mischief, even when least suspected, and that when once introduced into the system it may remain and continue its destroying work for years,—should not these facts lead the wise and intelligent physician, anxious to do his patient the greatest good and the least harm, to abandon its use altogether? So it seems to us.

In other forms of salivation, the cause should be removed as the first measure of treatment; and when this is done, little else remains to be done; recovery will soon take place. Good results may sometimes be obtained by the use of astringent gargles, as sage tea, decoction of white-oak bark, carbolic acid, or common salt. The electro-thermal and electro-vapor baths should be employed in cases of mercurial salivation, and much benefit will be derived from their use, as they are the best known means of eliminating the poison from the system. The diet should, of course, be simple and unstimulating, and every means possiole should be adopted for building up the patient's health.

PHARYNGITIS—CLERGYMAN'S SORE THROAT.

SYMPTOMS.—ACUTE: *"Cold in the throat;" "sore throat;" mucous membrane dry, red, and swollen, or covered with a tenacious secretion; pain in swallowing; nasal tone of voice; tickling in the throat, exciting cough; coated tongue; foul breath; salivation.*

CHRONIC:—*Slight pain in swallowing; granular appearance of the throat; elongation of the palate; tough, tenacious mucus, occasioning hawking and spitting; "hacking" or "hemming" cough; husky voice; expectoration of small, cheesy or calcareous masses; slight hemorrhages from the throat in the morning.*

Acute and chronic catarrh of the pharynx are among the most common of all forms of catarrhal disease. In some localities, one form or another of this disease seems to be almost universal. The causes are not always easy to determine, but the most common origin of the affection is a cold. Sometimes the disease assumes the form of an epidemic, the people of a whole neighborhood or a much larger section of country being almost universally affected at some time with the symptoms characteristic of acute catarrh of the pharynx. This is especially true of the form of the disease known as follicular pharyngitis, in which the throat presents a granular appearance. There are good reasons for believing that in these cases the disease may be allied to, if

not identical with, the affection known as diphtheria. We have observed cases in which the most severe form of diphtheria was evidently communicated by a person suffering with what was apparently simple follicular pharyngitis. It is doubtless possible to discriminate between the simple and the contagious form of the disease, but the examination of patients is not generally made with sufficient care to make the points of difference clear. The disease, in both its acute and chronic form, has some tendency to extend into the larynx and thence into the bronchial tubes, inducing acute or chronic bronchitis, although this tendency is not so strong as is generally supposed.

The chronic form of the disease is most commonly the result of repeated attacks of acute pharyngeal catarrh, though it not infrequently arises insidiously, giving no history of acute symptoms. The persons most subject to the habit are those addicted to the use of liquor, tobacco-users, persons of sedentary or dissipated habits, those exposed to an atmosphere charged with dust or irritating gases. A humid atmosphere and changeable climate favor the production of this disease. Males are more frequently affected than females. It is found in its worst form in persons of vicious habits. What is known as clergyman's sore throat is a form of this disease, and it is undoubtedly the result of the sedentary habits of this class of persons. Diseases of the stomach and liver are frequently causes of pharyngeal catarrh. Bad dietetic habits are an important factor in the production of this disease. The use of mustard, pepper, vinegar, pepper-sauce, ginger, and various other condiments, and the excessive use of salt, sugar, fats, and animal food, must be set down among the principal predisposing causes of this form of the disease. In this way the terms "stomach cough" and "liver cough" have arisen, the stomach being really the remote cause of the cough, the direct source of which is the irritation in the throat. The most annoying symptom of chronic pharyngitis is the hacking or "hemming" cough, which is sometimes very harassing. The cough arises in some cases from the irritation from the tenacious mucus of the soft palate, and in others from the elongation of the palate. When the palate becomes so long that the end rests on the back part of the tongue, it is very likely to cause a most annoying cough, and efforts at expectoration.

Chronic pharyngitis is often found connected with partial or complete deafness accompanied with the usual symptoms of chronic catarrh of the ear which has been induced by an extension of the disease from

the throat through the Eustachian tubes to the middle ear. This is, indeed, the most common origin of deafness, and the connection between these two conditions has given rise to the term "ear cough." Another common accompaniment of chronic pharyngeal catarrh is enlargement of the tonsils. This affection will be described under the head of "Tonsillitis." The small, cheesy particles frequently expectorated in this disease are masses of hardened secretion coming from the enlarged follicles of the throat, which may be easily seen as whitish bodies, varying in size from that of a millet seed to the size of a pea, imbedded in the tonsils. They gradually ulcerate out, and are discharged. The fetid odor is due to the decomposition which has taken place. Occasionally calcareous decomposition takes place, when the fetid masses are found to be hardened in character, and chalky. These particles are usually mistaken for tubercles, being supposed to come from the lungs, and are taken as a sure sign of tuberculous disease, or consumption. We have often found it very difficult to convince patients to the contrary. Every one should be convinced of the truth by the fact that tubercles are microscopic in size instead of being as large as these particles are found to be.

Treatment.—The acute form of the disease usually disappears in a very short time, seldom lasting but a few days, and generally disappearing almost wholly within two or three weeks. This fact leads most people to pay very little attention to the difficulty, which is thought to be only a "cold" that will speedily cure itself. We wish, however, to direct particular attention to the fact that this popular notion is a very mischievous error, since it is not infrequently the occasion of encouraging neglect, and results in the production of chronic and sometimes incurable disease. A cold is by no means so transient in its effects as is generally supposed. While an attack of acute catarrh of the pharynx frequently disappears in a short time, the effects produced by it remain more or less permanent, the patient being much more liable to suffer in the same way again than if he had not contracted the disease. As before remarked, it is by repeated attacks of acute catarrh that the foundation is laid for obstinate chronic pharyngitis. Hence the importance of giving prompt attention to the treatment of even the simplest form of cold in the throat. Of the large number of remedies proposed for the treatment of this disease, regular, irregular, and domestic, none give so prompt and complete relief as hot fomentations applied to the throat externally, and internal

applications of warmth and moisture by means of steam inhalations. An inhaler can be improvised by connecting a rubber tube with the spout of a tea-kettle or coffee-pot, or the simple form of inhaler shown on page 802 may be used. The inhaler referred to is so convenient and effective in use, and so inexpensive that it ought to be found in every family, ready for use when required. When there is much dryness and irritation in the throat the use of soothing gargles, as slippery-elm water, linseed tea, or thin mucilage water, will be found useful. Chlorate of potash gargle is also serviceable. When there is slight fever, as is generally the case, the patient may take a wet-sheet pack or a Russian, Turkish, or vapor bath, whichever is most accessible. The throat should be kept warm and moist, and the skin active. Care, should be taken to avoid exposure to drafts and cold air, by which means the perspiration may be suddenly checked. By the judicious use of these simple measures, nearly every case can be cured in a few days, and unpleasant after-effects avoided.

The treatment of chronic catarrh of the pharynx is a much more serious matter. There are few affections which are more obstinate and unyielding to treatment than this. The avoidance of all causes of the disease is of the greatest importance. The patient should adopt a plain, simple dietary, avoiding condiments, the use of fats, sugar, pastry, and all stimulating and clogging foods. If the patient has been addicted to the use of alcoholic liquors or tobacco in any form, these habits must be at once abandoned. Every possible measure should be taken to build up the general health by frequent bathing, keeping the skin in active condition, as well as by out-of-door exercise and careful regulation of all the habits. In addition to careful attention to the general health, local cold applications to the throat are of the first importance. Gargles, lozenges, and various other remedies, immense quantities of which have been used for this affection, are really of little consequence, as they do not reach the real seat of the disease.

Local remedies, to be of any value, must either be applied directly to the throat with a swab or brush or inhaled in the form of vapor or atomized spray. In the treatment of several hundred cases of chronic pharyngitis in which we have experimented in the use of a large number of remedies, we have found nothing of so much real value as the inhalation of hot spray by means of the steam inhaler already mentioned. The various other remedies may be employed in connec-

tion with the warm vapor, but these are of trivial importance when compared with the vapor itself. After using nearly all the various substances which can be thus employed, we have become thoroughly convinced that steam alone is, for the majority of cases, as useful as any medicated vapor. It is important that inhalation should be taken as hot as it can be borne, and the inhaling tube should be introduced into the mouth sufficiently far to bring the hot steam in contact with the affected membrane. The effect is similar to that of the hot douche. Additional benefit may be derived in some cases by the use of gum benzoin, a fragment of which, the size of a filbert, may be dropped into the inner cup of the inhaler when its use is desired. Hot solutions of chlorate of potash, tannin, and various other substances used with the atomizer, will also be found useful in the treatment of this disease. For local applications with the swab or brush, nothing is better than a saturated solution of chlorate of potash. We have sometimes used with benefit a mixture of tannin and glycerine, four parts of the former to one of the latter. We have also found useful a mixture consisting of twenty grains of hydrate of chloral and ten drops of tincture of iodine with an ounce of glycerine. Apply daily to the pharynx with a camel's-hair brush.

In addition to the measures of treatment mentioned, much benefit may be derived from the use of the hot-water gargle if pains is taken to allow the water to pass down deeply into the throat by throwing the head well back. The water should be as hot as it can be well borne. The effect of this is similar to that of the hot spray. The gargle should be used four or five times a day for four or five minutes at a time. The relief it will sometimes give is surprising.

The cold wet compress worn about the throat at night, followed by brisk rubbing with cold water in the morning, is another useful measure. This has a double effect, first, to allay local congestion; second, to harden the throat so as to diminish the liability to colds. The practice of wearing thick furs and woolen comforters about the neck is unnecessary, except in the coldest weather, and when habitual, is one of the most frequent causes of taking cold, as the throat is made unnaturally susceptible to change of temperature, and its resistance to cold is destroyed.

In conclusion, we would impress upon the reader the importance of persevering in the treatment of this affection. Notwithstanding its obstinate character, patient continuance in the use of proper measures

will, with rare exceptions, effect a cure; and as the disease is so frequently the occasion of obstinate, if not incurable, deafness, it is really of a very serious character even if the local symptoms are not so very annoying.

QUINSY—TONSILLITIS.

SYMPTOMS.—Chilliness; marked fever; redness and swelling of the tonsils and soft palate; pain and some difficulty in swallowing; entrance of liquids into the nasal cavity on attempting to swallow; pain behind the angle of the lower jaw and in front of the ear in advanced stage of suppuration.

Tonsillitis, or inflammation of the tonsils, is usually accompanied with acute inflammation of the pharynx or soft palate, and hence is accompanied with nearly all the symptoms mentioned as characteristic of the latter affection. On account of the more extensive swelling of the tonsils, there is much greater pain than accompanies pharyngeal catarrh, and the ear is much more liable to be affected by the extension of the disease through the Eustachian tubes. There is usually headache and a very full pulse. The chilliness and febrile action frequently precedes the swelling of the tonsils several hours or even a day. The tongue is heavily coated, the patient has very little appetite, and if disposed to eat would be nearly unable on account of the pain in swallowing. Unless speedily arrested in its early stages, the disease goes on to suppuration, and, if the discharge is not hastened by lancing, usually breaks and discharges in the mouth while the patient is asleep or during a fit of coughing. The pus of the discharge is usually swallowed when the discharge occurs during sleep, and the patient awakes from his troubled sleep very greatly relieved. The causes of the disease are the same as those which provoke acute pharyngitis.

Treatment.—The treatment is practically the same as that described for acute catarrh of the pharynx, but should be much more energetic. During the first stage of the disease, benefit may be derived from holding pieces of ice in the throat and packing the throat with pounded ice wrapped in a towel. At intervals of from two to three hours, alternate hot and cold applications should be made to the throat. The burning and dryness characteristic of the first stage of the disease may be relieved by mucilaginous gargles and drinks. Packs. tepid sponging. and the use of large compresses about the trunk, are measures which may be advantageously employed to subdue general fever. If suppura-

tion threatens in spite of efforts to abort it, it should be encouraged by the use of inhalations of steam and hot fomentations applied to the throat instead of the ice-pack. When the case is taken in time, the measures described will be found the most universally successful in aborting the disease When suppuration has evidently taken place, and the swelling in the throat has become soft, showing the presence of matter, much time may be saved by lancing the tonsil to evacuate the pus. In most cases, rapid recovery will take place, the tonsil returning to its natural size. Now and then a tonsil remains permanently enlarged. One attack of this disease predisposes to another, so that persons sometimes become so susceptible as to suffer an attack of tonsillitis from the slightest exposure.

ENLARGED TONSILS.

SYMPTOMS.—Sensation of a lump in the throat upon one or both sides; difficulty in swallowing in extreme cases; voice changed, patient often being unable to pronounce certain words; great susceptibility to "cold in the throat;" constant irritation in throat; in many cases, impairment of hearing.

As just remarked, this disease is frequently the result of acute inflammation of the tonsils. The enlargement is sometimes confined to one side, but frequently both tonsils are affected. In some cases the enlargement is so great that the passage through the throat is almost entirely obstructed. We have frequently had cases in which the two tonsils came in contact, so great was the enlargement. Sometimes enlargement is produced gradually. This is especially the case in scrofulous children. The results of enlarged tonsils are more serious than are generally supposed. They not only occasion permanent injury to the voice, giving it a nasal character on account of the partial paralysis of the soft palate, preventing complete closure of the passage to the nasal cavity, but not infrequently occasion serious injury to the middle ear from inflammation of the Eustachian tubes.

Treatment. In cases of marked enlargement, the treatment described for chronic pharyngitis may be given with success. Where the enlargement is very great, there is no remedy but removal. The operation is a trivial one, and should be resorted to promptly when its necessity becomes apparent.

DISEASES OF THE ŒSOPHAGUS.

Inflammation and Ulceration of the Œsophagus.—The œsophagus is subject to all the forms of inflammation which affect the mouth and larynx, though less liable to be thus affected. Inflammation of the œsophagus is most often excited by swallowing hot food and caustic or irritating substances, or by injury from a fish-bone or some angular body accidentally swallowed. Ulcers of the œsophagus may be produced by injuries from foreign bodies introduced by accident, or by the injudicious use of the stomach-tube. When inflammation or ulceration of the œsophagus exists in the lower part of this organ, it may be overlooked, as the sensibility of this part is not very great. Pain is usually felt between the shoulders.

The treatment of inflammation of the œsophagus is as nearly as possible the same as that suggested for inflammation of the mouth, the application of cold and the swallowing of small bits of ice being the most effective of such measures. Little can be done for ulceration of the œsophagus except to improve the patient's general health in every way possible, and cause him to abstain from the use of other than bland and unirritating articles of food.

Stricture of the Œsophagus may result from inflammation, or from the contraction of its walls after the healing of an ulcer. It may also be produced by aneurism, or by an abscess forming at one side. It usually develops gradually, the patient finding difficulty in swallowing steadily increasing until, at last, he cannot even swallow liquids. The obstacle always seems to the patient to be just beneath the upper part of the sternum, although its real position may be opposite the lower end or some intermediate part. When the obstruction becomes complete, several mouthfuls will often be retained, but only to be thrown up again. In most cases the patient gradually starves to death. The rational treatment is mechanical dilatation by probes, first smaller, and then larger, as the dilation increases. Some cases will not yield, and in these the result is, of course, starvation. It seems to us, however, that even complete closure of the œsophagus need not be the cause of death, at least not for a long time, since it is now so well known that the patient can be nourished not only for weeks but for months, and perhaps years, by the use of nutritive enemata, or injections into the bowels of properly prepared food.

Dilatation of the Œsophagus is an opposite, though very rare affection, which is also the cause of death in some instances. The dilatation may be complete through the whole length, cases having been observed in which it had increased to the size of a man's arm; or it may be confined to a small portion. Sometimes it exists in the form of a large sac connected with the œsophagus by a small opening through which the food passes, being retained in the sac instead of passing down to the stomach. In cases of the latter sort the food is retained in the cavities described until it undergoes decomposition, when it is expelled during attempts at swallowing. The treatment of this disease is very unsatisfactory, no remedy being in any great degree successful. In bad cases the only way of supporting the life of the patient is by passing food into the stomach by a tube, or by rectal alimentation.

Morbid Growths occasionally occur, giving rise to both stricture and dilatation. These are sometimes of a fibrous character, but not infrequently cancerous. Cancer of the œsophagus occurs most frequently in elderly persons who have been addicted to the use of alcoholic liquors. It is, of course, a fatal disease. The treatment can only be palliative, and the patient must be nourished by means of nutritive enemata. Sometimes, in cancer of the œsophagus as well as ulceration, a perforation occurs, which is not infrequently accompanied by instant death.

Nervous Diseases of the Œsophagus are perhaps the most common affections to which this organ is subject. The affection most frequently met with is that known as *globus hystericus*, so-called on account of the peculiar sensation, which is that of a ball rising into the throat, sometimes causing choking, and rendering the patient unable to swallow. As the name indicates, this affection is met with in hysterical persons, and consists simply of a spasmodic contraction of the circular muscular fibres of the œsophagus. The contraction may exist for several days, or may last only a few moments. It usually comes on during eating. In some cases there seems to be a reversion of the action of the œsophagus, so that, as the patient says, when he attempts to swallow, "the muscles work the wrong way." Remedies calculated to relieve congestion of the nerve centers are usually sufficient to dissipate this unpleasant symptom. We have found the application of ice to the back of the neck and between the shoulders, and the application of galvanism, to be successful. When the contraction continues to exist in spite of other measures, it may in most cases be relieved by passing a flexible tube down the œsophagus.

Paralysis of the Œsophagus is an affection which usually exists in connection with general paralysis, being very rarely a primary affection. When incomplete, the patient can swallow with difficulty, liquid food being taken better than solid. In cases of complete paralysis, swallowing becomes impossible. The use of electricity is the only remedy which promises a favorable result. As in most other affections of the œsophagus which interfere with nutrition, life may be maintained by the use of nutritive enemata.

DISEASES OF THE STOMACH.

ACUTE INFLAMMATION OF THE STOMACH—GASTRITIS.

SYMPTOMS.—Pain and heat at the pit of the stomach, pain increased by pressure; great nausea, with violent retching and vomiting; great thirst; desire for cold drinks, which are vomited as soon as swallowed; high fever and rapid pulse; quick breathing: bowels constipated; urine scanty and high-colored; tongue white and heavily coated; great prostration.

Causes.—This disease rarely occurs except when produced by poisons taken into the stomach as by swallowing mineral poisons,—alkalies, antimony, arsenic, etc. Cases have occurred in which gastritis was produced by taking boiling liquids into the stomach. Probably the most common cause is the use of alcoholic stimulants taken on an empty stomach. We have also seen it produced by eating animal food or excessive quantities of food when convalescing from a fever. It is a frequent accompaniment of *delirium tremens*. The disease is a very serious one indeed, and not infrequently ends fatally.

Treatment.—The first and most important measure of treatment is, as nearly as possible, absolute rest for the stomach. For drink, give the patient small bits of ice to hold in the mouth. If thirst is very great, let him take small quantities of cold mucilaginous drinks, as iced slippery-elm water. The thirst can in most cases be relieved by large injections of tepid water, which should be retained as long as possible. A sponge or towel should be held against the lower end of the bowels to prevent the water from passing away before being absorbed. It is of no use to trouble the stomach with food, as it will be almost certain to be vomited soon after it is swallowed, and if it is retained, will not be digested, as the secretion of the gastric juice is suspended while the stomach is in a state of inflammation. For nutritive enemata, nothing is better than good strong beef-tea made without the addition of water.

It may be injected in quantities of from two to eight ounces several times a day. At least two pints of good beef-tea should be taken in twenty-four hours. Beef-tea freshly prepared from meat should be used and not the extracts sold in stores, as those contain very little nourishment, being chiefly stimulating in character. Another excellent preparation, which has been elsewhere referred to, consists of equal parts of sweet cream and an infusion made from pancreas ground and macerated in a little water for a couple of hours, and strained through a colander. Nutritive enemata should always be about blood-warm when used. Ice-cold compresses should be applied to the stomach constantly, being renewed as frequently as is necessary to maintain their effect. When the acuteness of the inflammation has been subdued, warm poultices or fomentations may be applied to the stomach with advantage. When the fever is high, cool sponging and the use of large injections into the bowels should be resorted to. Emetics, laxatives, cathartics, and everything irritating should be sedulously avoided. There should not be too much haste about troubling the stomach with food. We have sustained patients suffering with acute gastritis for several weeks by means of nutritive enemata without difficulty. The first articles taken should be very bland in character and unstimulating, such as well-boiled and strained oatmeal gruel, well-boiled rice, milk, or milk and lime-water in the proportion of one part of lime-water to five of milk. Meat and flesh-foods of all kinds should be carefully avoided until tenderness of the stomach has entirely disappeared.

ACUTE CATARRH OF THE STOMACH—BILIOUS ATTACK.

SYMPTOMS.—Indigestion; heaviness at the pit of the stomach; dizziness; furred tongue and bad taste in the mouth; "sick headache;" tormenting pain in the forehead and temples, extending toward back of head; flashes before the eyes on stooping; feeling that the head will burst; vomiting of foul and acrid matters, and finally of yellow or greenish bile; in some cases, griping of the bowels and diarrhea.

A fact not generally known but well established is that catarrh of the stomach is the commonest of all forms of stomach disease. The digestion of each meal requires an unusual accumulation of blood in the mucous membrane of the stomach and an increased production of mucus. All that is required for the production of gastric catarrh is a slight exaggeration of this physiological process. The disease is common to all ages of life, and is particularly frequent in children. Fortunately, it is not very serious in its results, as it quickly subsides, and

disappears in a few days. The symptoms given above are those characteristic of the disease in its most marked forms. Very frequently the symptoms are so slight in character as to be scarcely observable otherwise than by loss of appetite, coated tongue, feeling of lassitude, and perhaps heaviness of the stomach.

In what is generally known as a "bilious attack," in which the liver is supposed to be chiefly affected, the real difficulty is with the stomach, the affection really being gastric catarrh. The pain felt under the border of the ribs on the right side, and attributed to the liver, is due to an extension of the disease from the stomach to the duodenum. In some cases, jaundice is present, which also confirms the popular notion respecting the liver; but this is due to obstruction of the excretory duct of the liver through swelling of the mucous membrane at its point of entrance into the duodenum. Sometimes, also, the catarrh extends into the bile duct, thus completely obstructing the flow of bile, and occasioning its absorption into the system, which gives rise to the yellowish appearance of the skin and dingy yellow color of the whites of the eyes seen in jaundice. Bilious attacks nearly always follow some indiscretion in eating. For instance, if a person subject to the disease eats a late supper, he will be quite sure to awake in the morning with what is termed a "splitting" headache, bad taste in the mouth, coated tongue, and no appetite. Soon after he gets up, if he attempts to rise, he begins to feel sick at his stomach and soon vomits acid and very foul-tasting matters,—decomposed remains of his last meal, and perhaps of one or two preceding meals. As the vomiting continues, he begins to throw up bitter, yellowish matter, which is almost directly after followed by an intensely bitter, greenish fluid, easily recognized as bile. The yellow matter is also bile discolored by the gastric juice. It only becomes green after the gastric juice has been neutralized. The vomiting is believed by patients to be caused by "bile on the stomach," and it is thought necessary to employ an emetic, or a laxative to carry it away by means of the bowels. Both of these measures are unnecessary and in the highest degree mischievous. The bile was not in the stomach when the vomiting commenced, but was brought into it by the violent retching, which reverses the action of the small intestine for a short distance below the stomach so that the bile is carried upward instead of downward. As the stomach is already in a state of great irritability, it is evident that both emetics and laxatives will be decidedly deleterious rather than beneficial.

Causes.—The principal exciting causes of the disease are the following:—

1. Overeating. More food being taken than can be digested, it undergoes decomposition, and the irritating products of fermentation excite congestion, which finally produces catarrh. The catarrhal symptoms do not usually occur until some hours after the overloading of the stomach, usually not until next day, as some time is required for the diseased condition to become established. Children frequently suffer from this cause, being allowed to nurse too long or to take too large a quantity of milk at a time. Generally, the infantile stomach repels a portion of the food when a larger quantity is taken than can be digested, retaining only the proper quantity; but in some cases vomiting does not occur easily, and then an excessive quantity may be retained, which, undergoing decomposition, occasions gastric catarrh. It is this fact which has given rise to the popular notion that it is a good sign for children to vomit often and easily, it being observed that such children sicken less readily than others.

2. Another common cause of gastric catarrh is the use of indigestible articles of food in even moderate quantities. As articles of this class may be mentioned all kinds of fat foods, fried foods, pastry, sweet-meats, preserves, ices, hard-boiled eggs, hash, and many other articles well known to be difficult of digestion. Animal fats are especially productive of catarrh, not only on account of being difficult to digest, but owing to the fact that they are not affected by the gastric juice they interfere with the action of this digestive fluid upon other portions of the food.

3. Another active cause of gastric catarrh is the use of foods which have begun to undergo decomposition. Game, meat that has been kept for some time until it has reached the condition technically known by epicures as "high," stale vegetables, rancid butter, and milk which has begun to sour, are all very likely to occasion acute gastric catarrh. Feeding infants with milk which has begun to sour, even in a very slight degree, is a great cause of infant mortality in the summer. Not infrequently, fermentation of milk is set up by contact with a nursing-bottle which has been imperfectly cleansed. The tubes commonly used in connection with nursing-bottles are absolutely dangerous, as it is almost impossible to cleanse them so thoroughly as to prevent possible injury in this way. Children also suffer from the neglect of nurses to cleanse the mouth after food is taken. This should

invariably be done, as milk will decompose in the mouth, and the next time the child is fed, the germs of fermentation will be communicated to the fresh milk taken, and fermentation will occur in the stomach. Neglect to take the simple precautions necessary to prevent fermentation in the stomach is one of the most active causes of disease in children in the warm season of the year.

4. Still another cause of acute gastric catarrh is irritation of the stomach from the use of very hot or very cold foods or drinks. The use of tea, iced-water, and ices in general, is especially objectionable for this reason. Drugs of various sorts, alcoholic drinks, and spices are especially productive of this disease. Spices and other condiments, when used in small quantities, at first excite digestion, but by increasing the process beyond its natural activity a reaction follows, which leads to gastric catarrh.

5. Stimulants and narcotics are particularly productive of gastric catarrh, first, by direct irritation of the stomach; second, by diminishing the secretion of gastric juice. Opiate and narcotic drugs also lessen the activity of the stomach, by which means food is too long retained in it, and irritation is thereby produced. The use of tobacco in any of its forms, also of tea and coffee, are very common causes of gastric catarrh, or bilious attacks. We have seen people relieved of the disease entirely, after having suffered almost constantly for many years, by discontinuing these habits.

6. Still another cause of gastric catarrh is "taking cold," one of the most common causes of catarrh.

Gastric catarrh is frequently produced in weakly children and adults who are just convalescing from some exhausting disease by causes which would not affect a healthy person injuriously. It is also frequently excited in children by using cow's milk without sufficient dilution, by the use of meat and vegetables for which the stomach is not prepared, especially by the use of confectionery and sweet-meats, with which they are often supplied as a means of keeping them quiet. Taking a hearty meal when the system is exhausted is a not infrequent cause of this disease. Sometimes the disease assumes an epidemic form, appearing in a large number of cases about the same time without any apparent cause. The exact causes in these cases are not yet well determined.

Treatment.—Give the stomach rest. The patient should take no food for twenty-four hours, or, at the most, nothing but a few sips of

water-gruel or something of a very light, starchy character. The warm full bath will greatly mitigate the patient's suffering by relieving the congestion of the head. Care should be taken to keep the feet thoroughly warm by means of hot jugs, bricks, etc. Very hot, or alternate hot and cold applications may be made to the head, as in many cases the application of the two will give most prompt relief. Fomentations over the stomach and bowels should be applied for several hours at the beginning of the attack. It is generally not best to administer remedies to stop the vomiting, at any rate at first, as it is a remedial effort of nature to remove from the stomach the offending matters which would do great harm if allowed to remain. The violence of the retching may be greatly relieved, and the stomach more quickly and thoroughly emptied, by making the patient drink large quantities of lime-water. When the character of the matter vomited shows that the stomach has been emptied of the decomposing food which it contained, the patient may be allowed to take a few sips of hot water or very weak tea, or to swallow bits of ice or sips of iced-water, as may be most grateful and is best tolerated by the stomach. The vomiting may be checked almost immediately in this way. It is well also to administer large warm enemata for the purpose of relieving the bowels as quickly as possible. They are almost always found to be obstinately constipated in these cases. Persons subject to frequent attacks of gastric catarrh have what is known as bilious dyspepsia, and must carefully avoid all the causes enumerated if they would recover health. All kinds of articles of food difficult of digestion, especially fat meats, fried foods, and most animal foods, together with butter, sugar, hot drinks, spices, and condiments, must be discarded from the dietary. As the digestion is very slow, meals should be placed sufficiently far apart to give the stomach plenty of time for digestion. Two meals a day are for such a person far preferable to more. Nothing should be taken under any circumstances after five o'clock in the afternoon, and nothing after four o'clock if the patient is in the habit of retiring early. Most patients will derive great advantage from a diet composed al-
cost wholly of fruits and grains, avoiding meats, and coarse vege-
bles. About the only vegetables which are tolerated by persons
ct to gastric catarrh are potatoes and asparagus. The wearing of
schlag, or wet girdle constantly during the night is an excel-
tive measure which may be adopted with benefit by per-
ing from this distressing affliction. When catarrh of the

stomach is the result of taking cold, the most prompt and efficient measure is a sweating bath of some kind, as the warm blanket pack, the vapor or Turkish bath.

CHOLERA MORBUS.

SYMPTOMS.—Vomiting, soon followed by purging; watery, acrid or acid discharges from the bowels; colicky pains, cramp in the feet and limbs; hiccough; rapid and feeble pulse; cold skin, often bathed with clammy sweat; voice feeble and hollow,

This disease is nothing more in fact than an extension in a severe form of the preceding, the watery discharges resembling those which not infrequently occur in catarrhal affections of the mucous membrane. The disease most frequently occurs in hot weather, and is generally excited by errors in diet, as the use of green fruit. Sometimes the disease assumes an epidemic form, a large number of persons being attacked at about the same time. Attacks most frequently come on during the night, the first symptom being a feeling of pressure at the pit of the stomach, which is shortly followed by nausea and vomiting. The matter vomited first usually consists of undigested food. After a time, a pale yellow or greenish fluid, intensely acrid, bitter, or acid, is vomited. Griping pains in the bowels are also present. The discharges from the bowels are at first pulpy in character, but soon become liquid, enormous quantities of fluids passing from the body. The result of this great discharge of fluids is a rapid shrinking of the tissues, giving to the features and other parts of the body a pinched appearance. The nose is pointed, the eyes sunken, and the skin appears dry and shriveled. It is always cold, and sometimes covered with a clammy perspiration. The discharges from the bowels sometimes have the appearance of thin rice-water or thin gruel, which gives the disease a close resemblance to cholera. The oppression of the patient is very great, the voice becoming hollow, and sometimes being lost altogether. Notwithstanding the serious aspect of the disease, it usually subsides in a few hours, the patient making rapid recovery. Sometimes, however, particularly in the cases of very old people and infants, the exhaustion becomes so great that the patient does not rally, and passes into a relapse. The discharges become involuntary, the pulse disappears, and the patient finally dies of exhaustion.

Treatment.—At the beginning of the affection, drink freely of warm liquids to facilitate evacuation of the stomach. Large, warm enemata will also be found serviceable. When the vomited matter no

longer shows traces of food, efforts should be made to stop the vomiting as soon as possible. Give the patient small bits of ice from the size of a bean to that of a filbert, allowing him to swallow the bits every few minutes. This is one of the most successful means of stopping vomiting. At the same time apply hot fomentations over the stomach and bowels. In cases in which hot applications to the bowels do not seem to give any relief, very cold compresses may be applied instead. If the patient suffers much from cramp, put him into a warm bath. Do not be alarmed if the vomiting and purging are not checked at once. The unpleasant symptoms will almost certainly disappear after a few hours. If the case is an unusually severe one, or the patient is far advanced in years, or a young child, a physician should be called at once, as it may become necessary to employ an opiate to check the vomiting. We have never lost a case in the treatment of this disease, and have very rarely found it necessary to employ other than the simple measures mentioned. It is very important that the patient should be careful in his diet for some time after the severity of the attack has passed away, as a relapse may be brought on very easily by indiscretion. The diet should consist chiefly of cooked fruits, avoiding seedy fruits, and grains. Animal foods and coarse vegetables should be wholly avoided until the stomach is fully restored to its natural condition.

CHOLERA INFANTUM.

SYMPTOMS.—Vomiting and purging, sometimes almost incessant; spasmodic pain in stomach and bowels; great prostration; bowels bloated or sunken; other symptoms mentioned in connection with the preceding disease.

This affection is also undoubtedly catarrhal in character. It is closely allied to cholera morbus, and is probably essentially the same disease, being modified by the age, and the character of the food upon which children are usually fed when they are most susceptible to the disease. It is quite probable that the great cause of the disease in children is the fermentation and decomposition of food in the stomach. This may be due to slowness of the digestion, to overloading the stomach, or to feeding with milk which has begun to sour, or has begun fermentation through inattention to thorough cleanliness in the care of the nursing-bottle, neglect to wash the child's mouth, etc. The disease is frequently preceded in children by a diarrhea, which often continues for several days before the disease makes its appearance.

At the beginning of vomiting, the milk thrown up is in a fluid condition instead of being well coagulated as is the case in health, which shows that the stomach is not active, there being little or no secretion of gastric juice. This is frequently a fatal disease, especially when it attacks young infants, or those who are of a feeble constitution.

Treatment.—The treatment should be essentially the same as that described for cholera morbus. The application of cold to the stomach is very beneficial. Where the child cannot swallow ice, iced-water may be given in very small quantities every few minutes. A matter of very great importance in the treatment of cholera infantum is giving the stomach entire rest. No attempt should be made to feed the child for at least twenty-four hours. There will be no suffering for want of food if it is withheld as long as the stomach is in such a condition. If the patient has an appetite, well-diluted milk may be given in small quantities after the vomiting has been quieted for some time. The milk should be diluted very considerably, at least two parts of water to one part of milk being employed at first. Also add a little lime-water if cow's milk be used. In case this is vomited, well-made beef-tea may be used. The beef-tea should be entirely free from fat. In case this is rejected, the patient may be nourished by means of the white of egg dissolved in cold water, or with beef tea enemas. If possible, the egg should be beaten to a froth, as it is more easily digested in this condition. Great care should be taken to keep the extremities warm and dry. With proper care and the application of the measures suggested, cholera infantum will not often prove a fatal disease.

CHRONIC GASTRIC CATARRH.

SYMPTOMS.—Pressure and fullness at the stomach after eating; flatulence; heart-burn; little or no appetite; vomiting; water-brash; tenderness at the pit of the stomach; slimy tongue; bad taste in the mouth; obstinate constipation; occasional jaundice; mental depression; lassitude; pains in the limbs and face; sleeplessness.

This disease is much more common than is generally supposed, and includes quite a large proportion of cases which are usually classed under the ambiguous head, dyspepsia. The most troublesome symptoms of this disease are due to deficient secretion of the gastric juice, dependent upon the congested state of the peptic glands, and the choking of the follicles with mucus. The great abundance of mucus also interferes with the action of the gastric juice by rendering it alkaline, and by coating over

the food, and rendering it impermeable by the digestive fluids. Deficient muscular activity of the stomach is also occasioned by the partial paralysis of the walls of the stomach consequent upon long-continued congestion. The disease is often long-continued, the patient rarely recovering without the employment of some special measures adapted for his relief. Its results, when long-continued, are thickening of the mucous membrane of the stomach, sometimes to an enormous extent, gastric ulcer, contraction of the pylorus, and enlarged stomach. Patients rarely die of the disease itself, life being cut short by other diseases which are produced by the great exhaustion and debility caused by the defective nutrition. Consumption very frequently follows gastric catarrh

Causes.—The causes are the same as have been mentioned as productive of acute gastric catarrh, by far the most important being errors in diet, the use of alcohol, drugs, tea, coffee, tobacco, and frequent exposure to heat and cold. The disease is very frequently the result of repeated attacks of acute gastric catarrh, but is occasionally gradually developed in the chronic form from the start. We have met many cases which seemed to have been produced by long-continued acidity of the stomach occasioned by dietetic errors. Gastric catarrh is frequently dependent upon other diseases which obstruct the venous circulation of the mucous membrane of the stomach, as diseases of the liver, organic disease of the heart, empyema, and chronic pleurisy.

Treatment.—Of first importance in the treatment of this disease, as in nearly all other serious affections, is entire discontinuance of all the causes which may have produced it. This is absolutely necessary; and it is impossible to effect a cure unless the patient is willing to deny himself and observe a strict regimen until the stomach is restored to a normal condition. The diet must be restricted to such articles of food as will be easy of digestion, will not overtax the stomach, and do not easily undergo fermentation. Sugar, butter, and condiments of all sorts, must be avoided. Vegetables, flesh foods, and all articles of food known to be difficult of digestion, must be excluded from the dietary. Gross and irritating food of all sorts must be avoided. On this account, cracked wheat, graham flour, and the whole-meal preparations in general, are not well tolerated in this disease, on account of the excessive irritability of the mucous membrane of the stomach. In cases in which there is little or no acidity of the stomach, or heart-burn, bland farinaceous ar-

ticles are the best, such as well-boiled and strained oatmeal gruel, fruits not seedy in character, baked apples, and similar foods.

It is well to avoid the use of meat when the patient can be otherwise sustained. At the most, a little of the white meat of fish or fowls may be used now and then. Soft-boiled eggs, with dry toast, well masticated and softened before being allowed to enter the stomach, agree well with most patients. In cases in which there is great acidity, starchy articles of food must be mostly avoided. For these persons a nitrogenous diet, or a bread and meat diet, is to be preferred. Very little fluid should be taken. No single article of food agrees so well with a large number of persons as milk. Not infrequently the disagreement of this article of food is due to bad association with other foods, as meat, vegetables, and fruits. If meat is taken largely as an article of food, little else should be eaten but well-baked, stale white bread. It is better that the bread should be toasted until brown and crisp. When milk disagrees with a patient, undergoing fermentation or forming large hard curds, it may be mixed with lime-water, in the proportion of one part of lime-water to four of milk; or it may be used in the form of buttermilk. The latter article seems to agree remarkably well with some cases of gastric catarrh. In the worst cases, however, no article is well received by the stomach, owing to the detention in that organ of undigested and partially decomposed food, which readily induces decomposition in whatever is eaten. In these cases one of two things must be done; either the stomach must be allowed to rest until it has become thoroughly emptied, and the mucous membrane has lost something of its irritability, or the stomach must be artificially emptied of its decomposing contents.

The stomach may be given rest by means of nutritive enemata, by the use of which life may be prolonged for an indefinite period. Experience shows that food injected into the rectum, although not digested in that part of the alimentary canal, is carried up into the small intestine by a reversed peristaltic movement of the bowels. We not long ago treated a patient for gastric catarrh to whom it became necessary to administer along with the food some remedies of a peculiar color and flavor, as nothing could be retained by the stomach. We were shortly surprised to hear the patient complaining of tasting the medicine administered. We at first supposed the difficulty to be wholly due to the patient's imagination, but upon examination of the matter regurgitated from the stomach we found it to present unmistakable evi-

dence of the presence of medicine injected into the rectum a short time before. The patient continued to expel portions of the medicine by the mouth so long as it was employed and for a few days afterward, the quantity gradually growing less. Physiological experiments have now established the fact above referred to, and nutritive enemata may be employed with the fullest confidence that if they are sufficiently nourishing and properly employed in sufficient quantity the patient will be adequately nourished thereby. Any one of the preparations described under the head of nutritive injections (page 737) may be employed for this purpose. On account of the ease with which it may be prepared, the beef-tea and egg preparation is to be very strongly recommended.

Fig. 275. Improved Stomach-Pump.

In Germany the stomach-pump is much used in these diseases for the purpose of cleansing the stomach from its decomposing contents, the stomach being washed out each morning before breakfast. The rapidity with which a cure may be accomplished by this means is often surprising. Although to most patients the remedy may seem to be a harsh one, it is by no means so unpleasant as might be supposed, the flexible tube passing into the stomach with very little difficulty after one or two trials. In Fig. 275 is illustrated a method of washing the stomach, preferable to the use of the stomach-pump. A little study of the cut will show the operation of the device. The elevated reservoir contains the tepid water used for the purpose, which passes through the upper tube to the mouth, and thence through the stomach-tube, the upper end of which is shown at *a*, into the stomach, the water being prevented from passing into the pail below by pressure upon the lower tube with the hand. After the stomach has been filled

by this method it may be readily emptied by closing the upper tube by pressure of the fingers, and opening the lower one. The pressure upon the stomach by the abdominal walls will force the liquid through the lower tube into the pail, thus starting the current, which, acting upon the syphon principle, will quickly empty the stomach. By repeating this process several times, the stomach may be thoroughly washed. In a short time the patient learns to perform the operation himself, and each morning washes his stomach as he would his face. We first saw this method employed by a patient suffering with cancer of the stomach who came under our care. This measure is, of course, necessary in only the most severe cases, and should be employed only under the supervision of a skillful physician.

In cases caused by frequently taking cold or long exposure to a damp, chilly climate, the patient should be treated with warm baths, and should take great pains to clothe the body, especially the trunk, very warmly, extra clothing to be worn over the stomach and bowels. Such general measures of treatment should be adopted as will improve the general tone of the system, as the general application of electricity, massage, tonic baths not too frequently repeated, etc. Wearing the moist abdominal bandage, called by the Germans the *umschlag*, will be found very excellent in many of these cases. The bandage should be worn night and day for two or three weeks, until a slight eruption appears on the skin, when it may be discontinued for a few days to allow the eruption to disappear. There is no advantage in establishing large, suppurating sores about the body, as was done in the old-fashioned water-cure practice and is still recommended and practiced by some unscientific hydropaths. Hot fomentations over the stomach for a few minutes just before or just after a meal are useful for these cases. Probably the best of all simple measures is the use of alternate hot and cold applications to the spine, just back of the stomach. A celebrated London physician recommends the use of large linseed poultices covering the stomach and bowels an inch thick, to be worn during the night. We have never found it necessary to resort to this method, believing that the same effect is obtained by the use of the abdominal bandage. In cases of great acidity of the stomach the patient will often find much relief by the use of finely pulverized charcoal, or charcoal crackers. The dry pulverized charcoal is, however, much the best. It may be taken as powder, or stirred in a little water. A tablespoonful of charcoal taken immediately after the meal will frequently prevent acidity.

Not infrequently decomposition of the food may be prevented by eating one or two charcoal crackers after the meal. The charcoal should be freshly burned to be of any value; hence that found at the drug-stores is rarely of much utility. In obstinate cases of chronic catarrh of the stomach the application of galvanism in the form known as central galvanization is a very excellent measure of treatment.

DILATATION OF THE STOMACH.

SYMPTOMS.—Water-brash; heart-burn; flatulence; cramp; fickle appetite; constipation; abdominal enlargement; occasionally vomiting of great quantities of sour matters resembling yeast.

Causes.—Dilatation of the stomach usually results from some obstruction to the passage of food into the intestine. This may be due to contraction of the pyloric opening, or to inactivity of the muscular walls of the stomach, which do not contract with sufficient force to expel the contents of the organ. This condition is a frequent accompaniment of cancer of the stomach. It is also sometimes the result of chronic gastritis. It occurs most often in gluttons and drunkards.

Treatment. This disease is an obstinate one, and in many cases cannot be cured. Much can be done to relieve the patient, however, and by persistent and thorough treatment a cure can sometimes be effected. The patient should eat only the most simple foods, such as are easy of digestion, and in the smallest quantity capable of sustaining life. Soups, and liquid foods of all kinds, should be avoided, as the absorption of fluids in this condition is very slow. The diet should consist chiefly of dry food which requires very thorough mastication. Vegetables should be wholly avoided, together with fat meats, and pastry of every sort. The patient should eat no fermented bread. The dyspeptic bread, or water-crackers, are excellent in this condition. In many cases, nutritive enemata may be advantageously used, giving the stomach a good opportunity for rest. The most prominent indication for active treatment is thorough and frequent emptying of the stomach. This may be accomplished in two ways: first, by drinking large quantities of water containing a little salt or carbonate of soda in the morning an hour before meal-time. Sufficient should be taken to excite vomiting, if possible, although, of course, if vomiting is not induced after several glasses have been taken, the patient should not continue to overload the stomach with liquid. The water should be [illegible] warm to be nauseating. Vomiting should be encouraged

by tickling the throat with a feather or the finger. By far the most efficient means of relieving the stomach of its decomposing contents is the stomach-pump or syphon arrangement already described in connection with the treatment of chronic gastritis. Powdered charcoal may be taken with advantage after each meal, in quantities of from a teaspoonful to two tablespoonfuls. Some benefit will be derived from the use of electricity, both galvanic and faradic, applied locally. A bandage worn in such a position as to support the distended stomach frequently adds much to the patient's comfort. Constipation should be relieved by enemas and manipulations of the bowels. The other symptoms should be treated as directed for the treatment of chronic gastritis and other disorders of the stomach in which the same symptoms occur.

GASTRALGIA, OR NEURALGIA OF THE STOMACH.

SYMPTOMS.—Severe pain of the stomach, at times extending back; stomach distended or retracted; vomiting, either at the beginning or close of the attack; sometimes a slight relief by pressure.

The pain of this disease is most acute. The patient fears that he is dying. In severe cases, patients complain of a clutching, tearing pain. It seems to begin at the lower part of the breast-bone. Vomiting may occur either at the beginning or the close of the attack. It lasts from a few minutes to several hours, leaving the patient thoroughly exhausted. Notwithstanding the excessive pain suffered, however, the attack is never fatal.

Causes.—Neuralgia of the stomach is generally produced by errors in diet, such as overeating, eating indigestible food, insufficient mastication of food, hot drinks, iced cream, tea and coffee, and alcoholic liquors. The disease is very frequent in Sweden, owing to the great use of spirits and coffee in that country. It is also induced by excessive venery and masturbation. Malaria is not infrequently a cause of the disease. It is frequently present in hysteria and other nervous diseases, and is often an accompaniment of catarrh of the stomach. It also results from chronic ulcer of the stomach, dyspepsia in its various forms, and diseases of the generative organs. It is most common in females.

Treatment.—The patient must take a simple, unstimulating diet, abstaining entirely from alcoholic drinks of all sorts, and from tea and coffee. If addicted to the use of tobacco, the practice must be discontinued. All the known causes of the disease must of course be avoided. Every

measure should be taken to improve the general health. Upon the occurrence of an attack, the pain may be much lessened by hot applications to the stomach and abdomen. Also apply heat to the extremities. The full or sitz bath will often give relief where other measures fail. In extreme cases, it sometimes becomes necessary to apply an opiate of some kind. In such cases, of course, a physician should be called in. Even these cases will generally yield to the application of electricity. The positive pole should be placed over the spine, just back of the stomach, and the negative over the seat of pain. Both galvanic and faradic currents may be used, but we prefer the former.

CHRONIC ULCER OF THE STOMACH.

SYMPTOMS.—Pain in stomach and in spine opposite, increased by food, especially hot drinks and sugar; tenderness of abdomen, particularly over the stomach: violent beating at pit of stomach; vomiting; tongue ridged and furred; often great thirst; constipation.

Ulcer of the stomach is a much more common disease than is generally supposed. Many cases supposed to be merely neuralgia of the stomach are really chronic ulcer, it being very easy to confound the two diseases. The ulcer may be very small in size, not more than one-fourth of an inch in diameter, or may extend until it becomes as large as the palm of the hand. Sometimes the ulcer encircles the stomach like a band.

Causes.—The chief causes of ulcer of the stomach are obstruction of the circulation and errors in diet, particularly the use of very hot or cold food, and of liquor, tea, and coffee.

Treatment.—The disease is rarely a fatal one. The patient sometimes dies of hemorrhage, perforation of the walls of the stomach, or peritonitis. Unless efficient treatment is applied, the disease is liable to continue for many years. The dietetic treatment of the disease is of the greatest importance. The patient must avoid all kinds of irritating food, particularly hot and cold drinks, sugar, acids, and food which is capable of producing mechanical irritation, such as vegetables, bread made from coarse flour, etc. The diet should consist of such plain foods as milk, either alone or with fine-flour bread, soups, oatmeal gruel, well boiled and strained, beef-tea, etc. In very serious cases, entire rest must be given, the patient being nourished by nutritive enemata. (The other measures of treatment have been fully described under chronic gastritis.) This measure may be resorted to either in connection with the restricted diet, or as an exclusive means of sustaining the patient. Perhaps there

is no way by which so speedy a cure can be effected as by giving the stomach entire rest. When there is gas in the stomach, it may often be relieved by the use of freshly burned charcoal taken in powder. Some eminent physicians employ the stomach-pump, as recommended in chronic gastritis.

The other symptoms which accompany this disease should be treated in accordance with the suggestions already made in connection with the treatment of disorders of digestion. When perforation occurs, death is the almost certain result. It should be remarked that pain will often continue for some time after the ulcer is healed, owing to the formation of cicatrices, which cause contraction of the walls of the stomach. When hemorrhage occurs, which is not infrequently the case in this disease, it should be treated as described in the following section.

HEMORRHAGE OF THE STOMACH.

SYMPTOMS.—Blood vomited in considerable quantities; blood not frothy, and of dark color; blood usually in clots, and mixed with portions of food; uneasiness or other symptoms pointing to the stomach and bowels.

Vomiting of blood is the most characteristic symptom. Usually blood coming from the stomach is mixed with portions of food, which is also a means of distinguishing it from hemorrhage of the lungs. Notwithstanding the apparent loss of immense quantities of blood in hemorrhage from the stomach, the majority of patients recover under the employment of proper measures.

Causes.—Hemorrhage of the stomach is most commonly caused by the rupture of blood-vessels, due to ulceration. In chronic ulcer of the stomach, and cancer, this is a prominent symptom. It may also be caused by intense congestion due to pressure, and by mechanical obstruction of the circulation in the chest, caused by disease of the lungs and pleura. It is also an occasional symptom in scurvy.

Treatment.—The patient should be given absolute rest. No food should be taken for at least forty-eight hours, and in severe cases the stomach must be given entire rest for some time, at least until the symptoms of bleeding have entirely disappeared, the patient being nourished in the meantime by nutritive enemata. The best measure of treatment is cold. It should be applied externally by means of ice compresses; internally, by giving the patient small pieces of ice to swallow, or frequent sips of iced water. The patient may also be allowed to take lime-water

or the serum of milk which has been coagulated with lime. Very little good generally comes from the use of astring nts, however, as they are almost invariably vomited as soon as swallowed Bleeding and the use of morphia are dangerous measures to employ, and their adoption in this disease has often proved fatal The direction frequently given to purge the patient directly after hemorrhage is a very mischievous one, as it will be likely to bring on a relapse.

All the good effects supposed to be derived from bleeding may be obtained by the use of Junod's boot, elsewhere described, or by ligating one or both limbs near the body, by means of which a quantity of blood may be temporarily removed from the circulation. Ligation, of course, should not be too severe, and should not be maintained sufficiently long to produce complete stagnation of the circulation in the limbs. In extreme cases, where the patient has lost so much blood that death is imminent, the chances for life may sometimes be increased by the practice of the transfusion of blood, elsewhere described. Hemorrhage from the stomach should not be mistaken for bleeding from other organs, as from the lungs or air-passages. Not infrequently blood is vomited which had been swallowed during bleeding at the nose, sometimes during sleep.

CANCER OF THE STOMACH.

SYMPTOMS.—Pain at the pit of the stomach of a burning or gnawing character, increased by food: tenderness on pressure over the stomach. nausea and frequently vomiting, the vomited matters often resembling coffee grains: hard, pulsating tumor felt near the pit of the stomach: great emaciation: tawny yellow complexion: symptoms of enlargement of the stomach: great exhaustion · swelling of the ankles: sometimes general dropsy.

The disease is often somewhat obscure, very few of the characteristic symptoms mentioned being present. Sometimes the only symptom observable is gradual emaciation which does not yield to any ·tment. In such cases, of course, diagnosis is impossible. In many positive diagnosis is very difficult, the most skillful physicians uently making a mistake after the most careful examination. er organ of the body is so frequently affected by cancerous the stomach, but the causes of cancer of this organ are not ood. It is probable that the true causes are chronic gas- nd dietetic abuse of the organ, particularly the use of al-

seems to be hereditary in some families. The father

of Napoleon I., his sister, and himself, all died of this disease. Cancer of the stomach also frequently occurs subsequent to cancer of some other organ. We have frequently observed this in cancer of the breast, particularly after operations for removal of the breast in cancerous disease.

Treatment.—Cancer of the stomach is most likely to be confounded with chronic gastritis and ulcer of the stomach, from which it is sometimes very difficult to distinguish it. The disease is, of course, incurable, but by careful treatment the patient's life may be prolonged and his suffering greatly mitigated. As there are no curative measures which can be used with any prospect of success, we are confined to the use of palliative remedies. The same measures of treatment should be employed in this disease which have been recommended in extreme cases of chronic catarrh, enlargement of the stomach, and gastric ulcer. When the disease has progressed to a considerable degree, the offensive discharges may be very much diminished by the free use of finely powdered charcoal. The patient's sufferings are often so great that the use of opiates for relief is advisable. They should, of course, be given under the direction of a physician. The stomach-pump or syphon apparatus is exceedingly serviceable, as by its use the stomach may be cleansed of foul matters, which are usually absorbed into the system to a considerable extent, hastening a fatal result by general poisoning. Constipation of the bowels should be relieved by injections of tepid water.

DEGENERATION OF THE PEPTIC GLANDS.

SYMPTOMS.—Loss of appetite: impaired digestion: gradual emaciation and increasing debility: morbid condition known as degeneration of the glands which secrete the gastric juice: death by exhaustion.

The only morbid symptoms are those mentioned. No special causes of this disease have been determined, but there is no doubt that the use of alcoholic liquors and tobacco, together with the causes which produce degeneration in other organs, cause degeneration of the peptic glands.

Treatment.—Little can be done for patients suffering with this disease. The treatment should consist in attention to the general health and the exercise of great care in the regulation of the diet so as to tax the digestive organs as little as possible. Only the most simple and easily digested foods should be employed.

DIARRHEA.

SYMPTOMS.—ACUTE : ***Looseness of the bowels; pain in abdomen, either colicky or continuous; purging; nausea; vomiting; coated tongue; foul breath; flatulence; eructations of gas; loss of appetite; headache; sometimes chill followed by fever.***

CHRONIC : ***Diarrhea, alternating with constipation; discharges from the bowels thin, greenish-yellow or nearly colorless, usually containing considerable mucus; sometimes, cylindrical casts; thirst; high-colored urine; discomfort after eating; emaciation.***

Intestinal catarrh, generally known as *enteritis*, is a very common disease, especially in warm climates and in temperate climates during the warm season. The inflammation most commonly affects the small intestine, either of the three portions of which, the duodenum, the ileum, or jejunum, may be affected separately or together. The disease is sometimes confined to the large intestine and is known as *colitis*, or to the lower part of the cæcum, when it is called *typhlitis*. When it affects the rectum only it is known as *proctitis*. Occasionally the whole intestinal tract is affected at once.

Causes.—Chiefly irritation from indigestible or improper food, as unripe fruit, stale vegetables, food which has begun to undergo decomposition, poisons, irritating medicines, etc. Among the causes may be mentioned the irritation produced by retained feces, as in chronic constipation. Mechanical injuries to the bowels, as from blows or straining, may produce intestinal catarrh. We have good reason for believing also that it is produced by "taking cold," like catarrh of the air-passages. Among other causes may be mentioned congestion of the liver, diseases of the heart and kidneys, and consumption. Sometimes severe intestinal inflammation occurs after extensive injury to the skin by burning. Malarial poisoning has been observed to be a cause of chronic intestinal catarrh. The disease is especially frequent in infants. Notwithstanding the influence of cold in producing the disease, it is much more common in hot weather and tropical climates. The catarrhal affections of different portions of the intestinal canal are indicated by characteristic symptoms, which we have not space to mention here, with the exception of those of—

Typhlitis.—This is a form of the disease in which the lower part of th ecæcum, often including the appendicular vermiformis, presents a swelling low down on the right side which is accompanied by considerable pain and obstinate constipation. Usually, the swelling finally disappears, the contents being discharged into the bowels; but sometimes the wall of the intestine is perforated and the contents dis-

charged into the abdominal cavity, which is a fatal accident. In other cases the perforation is external, the contents being discharged through a fistulous opening.

Catarrh of the rectum, which very frequently occurs, closely resembles dysentery.

The disease is not dangerous except in infants and persons advanced in years.

Treatment.—The regulation of the diet is of the first importance in this as in most diseases of the digestive organs. He should abstain entirely from the use of vegetables, cheese, meat, corn-bread, and bread made of coarsely ground graham flour. The patient should subsist chiefly on milk, the yolk of egg, oatmeal, pearl barley, and similar food. Fats of all sorts should be carefully avoided. Next in importance as a measure of treatment, is the proper employment of enemata. We have seen more benefit derived from the injection of large quantities of hot water—as hot as could be borne, and in as large quantities as could be retained—than from any other single measure of treatment. Fomentations to the bowels should be applied once or twice a day, and the abdominal girdle should be worn night and day. The patient should take great care to thoroughly clothe himself, wearing woolen undergarments the year around. Cathartics and emetics should be scrupulously avoided. When the disease is produced by cold, it is best treated by sweating baths, as the Russian, Turkish, vapor, or hot-water bath. The warm-blanket pack is also an excellent remedy in these cases. The hot or cold water used in injections should be employed in considerable quantities, either as hot as can be borne or quite cool. Dr. Mesmer, an eminent physician, employs cold-water injections altogether. We have used both hot and cold water successfully in both acute and chronic diarrhea, sometimes one and sometimes the other being best adapted to the particular case. If one does not give relief, the other should be tried. The physician mentioned employs in acute diarrhea about one quart of iced water at a time, injecting it slowly, and having it retained as long as possible. Cool sitz baths employed daily for from fifteen to thirty minutes, the temperature being gradually lowered from 92° to 85°, are an excellent means of treatment in chronic intestinal catarrh. In the acute form of the disease, when fever is present, and there is evidence of considerable inflammation, the cool wet-sheet pack, and continuous application of cold compresses over the bowels, are excellent measures

of treatment. Vomiting and other symptoms should be treated as when they occur in connection with other diseases. When symptoms of typhlitis, or catarrh of the rectum, appear, applications of ice compresses should be made to the parts affected during the first stages of the disease, but after it becomes evident that suppuration must take place, the ice compresses must be exchanged for fomentations, so as to hasten suppuration, and thereby terminate the disease.

ACUTE DYSENTERY.

SYMPTOMS.—Diarrhea; chilliness or rigor, followed by fever; severe pain in the bowels; constant desire to stool; burning pain in the rectum; watery or mushy discharge, with considerable quantity of tough mucus, which is often streaked with blood; pain, not removed by movement of the bowels; jaundice; headache, dizziness, ringing in the ears; inability to sleep; little appetite; great thirst; tongue at first white, afterward smooth and slimy; bowels painful to the touch; putrid discharges.

Causes.—Acute dysentery occurs in two forms,—in isolated cases, in which the disease originates spontaneously, and is not communicated to others; and in epidemics, in which large numbers of persons are affected at once, the disease seeming to be communicated from one to another. The symptoms in the course of the two diseases are essentially the same, the isolated cases generally being milder in character, however. The principal causes of dysentery are decayed or irritating food, unripe fruit, imperfect mastication, indigestion, constipation of the bowels, and taking cold. Epidemic dysentery is supposed to be excited by some specific poison, probably of the nature of germs, though this point has not been determined as yet. All of the causes mentioned as giving rise to the simple form of dysentery, and also to catarrh of the bowels, are predisposing causes of epidemic dysentery, as they prepare the way for the action of the germs of the disease.

Treatment.—The disease is generally quite easy to manage if taken in time and treated vigorously. In the treatment of cases of epidemic dysentery the first thing to look after is the prevention of the extension of the disease to those not yet affected by it. This may best be done by thoroughly disinfecting the discharges of the patient by chlorate of lime, or permanganate of potash, and requiring the observance of careful dietetic rules. All kinds of food which occasion constipation of the bowels, such as fine-flour bread, potatoes and other starchy vegetables, and, in some cases, milk, must be avoided alto-

gether. At the beginning of the disease, where there is evidence of the presence of undigested food in the stomach, the stomach should be relieved by the use of a large warm-water emetic. The quantity of food should be restricted to the smallest amount compatible with comfort. Ripe fruits, especially grapes, and most stewed fruits, may be used in abundance to keep the bowels regular. Salads, spices, and other condiments, fats, fried foods, and large quantities of meat, should be strictly avoided, together with tea, coffee, and all other stimulants and narcotics.

The patient should remain quiet, preferably in bed, although he feels able to go about the room. He should be carefully protected from changes of temperature. The diet should consist chiefly of simple soups, well-boiled oatmeal gruel, egg beaten up with water or a little milk, and similar foods. No cold foods should be taken. In many cases, regulation of the diet is sufficient. Care respecting the diet should be exercised over the patient not only during sickness but in convalescence, the patient being confined to the simplest articles of food and required to abstain from the use of meat until health is fully restored. Colicky pains in the bowels should be treated by means of fomentations. They should be applied as often as possible. Ice-cold compresses are also recommended. This is a useful remedy, but more are benefited by the use of hot applications than by cold. Either the hot or the cold enema may be employed as recommended for diarrhea. Both plans are successful. In the children's hospital in Vienna, injections of iced water into the rectum is a favorite remedy.

The use of opium, which is exceedingly common in this disease, is not advisable, as it produces a feverish condition of the system, decidedly prejudicial to recovery. Herrvner, an eminent German physician, very strongly discourages the use of opium in this disease. If the other treatment is applied thoroughly, it will rarely be thought necessary.

In mild cases, the wet abdominal bandage, sometimes called Neptune's girdle, is all that is necessary to relieve the abdominal pain and check the disease process. In cases in which absolute rest is not demanded, the shallow, cool sitz bath may be used with great advantage several times a day.

CHRONIC DYSENTERY.

SYMPTOMS.—Looseness of the bowels, with discharges of mucus; burning pain in the rectum; abdominal dropsy; emaciation.

Chronic dysentery is usually the result of an attack of dysentery from which the patient has partially recovered, though sometimes the disease comes on insidiously. The general principles of treatment are the same as those in the acute form of the disease. In addition, astringent injections may be used with much advantage, such as solution of tannin, sulphate of zinc, alum, or nitrate of silver. The latter is an excellent remedy, and should be used in the proportion of about four grains of nitrate of silver to a goblet of hot water. Chlorate of potash is also an excellent remedy. It may be used in the proportion of ten grains to an ounce of hot water. Soothing injections are likewise of great service, especially in the acute form of the disease, such as linseed tea, thin starch, or mucilage-water enemata. Everything should be done to maintain the patient's general health, as in many cases the diseased condition is maintained by malnutrition, and can be cured only by improvement of the general condition of the patient.

COLIC—ENTERALGIA.

SYMPTOMS.—Griping pain in the bowels, especially about the navel; pain, spasmodic in character, generally relieved by pressure; no tenderness of the bowels; frequent vomiting; bowels usually constipated, and frequently flatulent; no fever; pulse generally slower than usual; skin cold.

The term colic is properly applied to a spasmodic muscular contraction of the walls of the intestines, but on account of the difficulty of distinguishing the two conditions, it is often also applied to a neuralgic affection of the intestines known as enteralgia. The disease is usually caused by indiscretions in eating, as of unripe fruit, stale or decaying vegetables or other food, certain kinds of fish, or by taking cold, etc. The disease is often a very painful one, leaving the patient much prostrated, but is never fatal. The application of hot fomentations or dry heat to the abdomen, and the use of large hot enemata, rarely fail to give speedy relief. In cases of chronic enteralgia such as are sometimes met with, nothing is so effective as the use of electricity in the form of a mild faradic current or galvanism.

LEAD COLIC.

SYMPTOMS.—The usual symptoms of lead-poisoning; skin dingy; teeth discolored; bad breath; metallic taste in the mouth; obstinate constipation.

The most successful treatment of lead-poisoning is that of a preventive character. Lead pipes or vessels should not be used for conveying or holding water. Workmen engaged in industries which expose them to the fumes of lead or to fine particles of lead in the air, should protect themselves by good ventilation, respirators, etc. Particular pains should be taken to prevent the entrance of the poisonous metal into the throat, or the food and drink. In cities where lead pipes are used, water should be allowed to run some time before using, in order to empty the pipes of the water standing in them. Tin vessels used for containing milk should be carefully tested before being used. Vessels lined with enamel should be tested before they are used for cooking purposes. Tin cans in which fruits are put up should also be submitted to the test, as they are frequently made of the poorest kind of lead tin. The bowels and excretory organs should be kept open by water-drinking. Warm baths, especially the electro-thermal bath, should be assiduously employed. It has been stated on good authority that in cases of lead-poisoning, lead has been found in the water in which the patient had taken the bath, the metal having been eliminated from the system by the aid of the galvanic current. Biliary colic and renal colic will be referred to in connection with diseases of the liver and kidneys.

CONSTIPATION OF THE BOWELS.

SYMPTOMS.—Inactive condition of the liver; movement of the bowels infrequent or wholly suspended without artificial aid; inactive condition of liver and kidneys, indicated by scanty urine and pale color of feces; skin dry and sallow; breath foul; mind depressed; headache; neuralgia; palpitation of the heart.

Constipation of the bowels is one of the most frequent disorders of the digestive organs. The principal causes of the disease are sedentary habits, concentrated diet, and the use of tea, coffee, tobacco, and beer. Some of the most obstinate cases of constipation are produced by the long-continued use of opiates. It is also frequently the result of other disorders of these organs, as chronic intestinal catarrh, stricture of the intestines, partial paralysis or inactivity of the muscular walls of the intestines, etc. Another cause which is worthy of mention is neglect to evacuate the bowels when the desire is felt. The contents of the bowels

are gradually carried down to the rectum, and when they reach this point there is generally a desire to relieve the bowels. If the duty is at once attended to, the habit of evacuating at a regular hour soon becomes fixed. If the call of nature is unheeded, however, the feces are carried upward by peristaltic action into the colon again, so that the desire passes away. By long neglect, the bowels may get into such an abnormal condition that the desire to relieve them will never be felt. The bowels act very differently in different persons. In the majority of cases the bowels move about once each day. Others require two movements a day. In still others the interval is prolonged to two or three days. In occasional instances the bowel movements occur but once a week, notwithstanding the person enjoys perfect health. It is sometimes astonishing to see how long the contents of the bowels may be retained. While a student in Bellevue Hospital, New York, we learned of the case of a man who had no movement of the bowels for three months. He was then obliged to devote himself to the duty of emptying the bowels for three or four weeks, and lost in that time forty pounds which he had accumulated. Last, but not least, among the causes of constipation should be mentioned the habitual use of laxatives or cathartics in the shape of "dinner pills," "purgative pills," etc.

The results of constipation of the bowels are often very serious. The accumulation of fecal matter in the bowels obstructs the portal circulation and induces disorder of nearly all the abdominal organs. The liver and kidneys become inactive through mechanical obstruction, the stomach becomes affected, and the pancreas and spleen participate in the general disorder, having their functions very greatly impaired. The circulation in the lower limbs is also interfered with by pressure on the large veins which return the blood from the lower part of the body, occasioning numbness and coldness of the feet and legs, which is an almost constant accompaniment of this disease. Absorption of the decomposing fecal matter also takes place to some extent, giving rise to foulness of breath; and the poisoning of the nerve centers occasions great mental depression, headache, confusion of thought, neuralgia, and a great variety of symptoms. One of the most common and painful results of chronic constipation is *hemorrhoids*, or *piles*. They arise from obstruction of the circulation due to fecal matter in the bowels. As these generally require the use of surgical measures for relief, we notice them but briefly here.

Treatment.—Even the most obstinate constipation not dependent

on structural lesion of the intestines, can generally be relieved by thorough rational treatment. In the first place, all the causes of the disease must be carefully avoided. If the patient's habits have been sedentary, he must take abundant exercise by walking, riding, etc. Horseback riding is particularly useful in this disease. Another excellent measure in such cases is vigorous kneading and percussing of the abdomen several times a day for five or ten minutes at a time. Many obstinate cases of constipation have been cured by this means alone. Eating an orange before breakfast, or drinking a glass or two of cold water, are simple measures which have sometimes proved effective. The diet should be carefully attended to. Unless there is some disease of the stomach, such as ulcer or painful dyspepsia, coarse food should be used. Very little animal food should be taken. The diet should consist of fruits, unbolted meal, or grains. A regular time should be appointed to relieve the bowels, whether there is any inclination or not. The time at which movement is most likely to be secured is after breakfast. With some persons, however, the movement occurs immediately upon rising. Hot applications to the abdomen, the use of alternate hot and cold applications to the lower part of the spine, the employment of the abdominal girdle, and cool sitz baths daily, or every other day, are measures of great value in the treatment of this condition. In the treatment of obstinate cases, we have often secured great benefit by the employment of electricity and Swedish Movements. Electricity should be applied directly to the bowels sufficiently strong to occasion slight contraction of the abdominal muscles. When the patient has been for a long time dependent on laxatives of some sort, enemata of tepid water should be substituted while the effect of remedial measures of a more radical character is being obtained. The bowels should not be allowed to move when the contents have become hardened by long retention without taking large enemata. In very bad cases the patient will find great relief by evacuating the bowels while sitting over a vessel filled with water as warm as it can be borne. By means of the simple measures mentioned above we have relieved cases in which there has been no natural movement of the bowels for from ten to twenty years, the patient having been wholly dependent upon cathartics.

INTESTINAL HEMORRHAGE.

SYMPTOMS.—Bloody discharges from the bowels, either pure or mixed with natural discharges; when the bleeding is excessive, fainting and other symptoms will usually result from loss of blood.

The most common cause of intestinal hemorrhage is hemorrhoids, or piles. Hemorrhage from the bowels also frequently occurs in connection with ulcer of the stomach, cancer of the bowels, typhoid fever, dysentery, and some other diseases. If the bleeding is severe, it probably originates from some other cause than hemorrhoids. It is imperative that the most complete rest should be maintained. Ice compresses should be applied to the abdomen, and iced water should be injected into the rectum. The patient may be allowed to swallow small bits of ice, but little good can be accomplished by remedies taken into the stomach, as they will not be likely to reach the seat of hemorrhage until too late to be of any value. When the bleeding comes from piles, the application of ice compresses or of bladders filled with iced water should be made to the affected part. When bleeding is habitual, it is very important that the patient's diet should be regulated carefully. He should abstain from meat almost entirely; the less eaten, the better. Eggs may be eaten once a day, but vegetables, fruits, and grains should be the principal diet. If the bleeding is supposed to come from plethora, the suggestions made for the relief of that condition should be carefully followed. It is of especial importance that the patient should abstain from all kinds of spirituous liquors, fat meats, and, in fact, meats of all kinds. The diet should be restricted to as small an amount as is consistent with comfort, and the strength of the patient. Patients of this class are generally excessive eaters.

INTESTINAL OBSTRUCTIONS.

SYMPTOMS.—Persistent vomiting; vomiting of fecal matter; extreme pain; distension of the bowels with gas; hiccough; constipation of the bowels; mental depression; great prostration; tumor, which can be felt through the abdominal walls.

The causes of intestinal obstruction may be divided into six classes, as follows:—

Compression.—This cause of mechanical obstruction of the intestines may result from morbid growths of any sort, as various forms of tumor, including cancer, or from a displaced uterus. We have within a week of the date of this writing met with a remarkable case in

which the last mentioned cause occasioned the most obstinate constipation for many years. The lady had received treatment from many physicians for a period of eight years, but without relief. During this time there had rarely been a movement of the bowels without the employment of laxatives of some kind. She was in the habit of taking senna at night for the purpose of securing an evacuation of the bowels the next morning. Upon making an examination of the womb, it was found to be completely retroverted, or tipped backward, thus pressing upon the rectum in such a way as to form an obstacle to the downward passage of the contents of the bowels.

Contraction.—One of the worst forms of obstruction is due to stricture or contraction of the intestine, caused by chronic catarrh, dysentery, cancer, or chronic ulcer of the intestine. This kind of obstruction occurs most frequently in the rectum or lower part of the bowels. It is indicated by great difficulty in moving the bowels and the small size of the stools, when formed.

Twisting.—In some manner not easily understood, the small intestine sometimes becomes twisted upon itself so as to form an obstruction. So slight a degree of twisting as one-half rotation is said to be sufficient to close the canal.

Internal Strangulation.—This is one of the worst forms of mechanical obstruction, as it consists in the entanglement of an intestine in a fissure between bands of inflammatory tissue, or the formation of a sort of knot in the intestine itself.

Intussusception.—This form of obstruction is produced by the intestine being invaginated, or folded into itself. One cause of this accident is chronic diarrhea. It is most frequent in children, especially in children suffering with *hydrocephalus.* The occurrence of this accident is usually indicated by severe pain felt over a certain spot in the abdominal cavity. A tumor may also be generally felt at the seat of pain indicating the point of obstruction.

Hardened Feces.—This cause of obstruction is one which should not be overlooked, as it is one which is not infrequent. Cases are often met in which the feces accumulated in the lower part of the bowels are so hard and dry that they cannot be dislodged by the ordinary efforts of nature. Occasionally, also, stony concretions form in the intestines, of sufficient size to obstruct the intestinal canal. These are generally the result of the use of chalk or magnesia in large quantities,

or of accumulations the nucleus of which consists of gall stones or foreign bodies which have been swallowed, such as coins, cherry or plum pits, seeds of raisins, etc. *Rupture*, or *Hernia*, is another cause of intestinal obstruction, but as this properly comes under the head of surgery it will not be considered here.

Treatment.—The treatment of intestinal obstruction depends, of course, upon the cause. If the obstacle consists in morbid growths within the abdominal cavity, little can be done to ameliorate the patient's condition. If it is simply a retroverted or displaced uterus the remedy is simple and easy of application when the nature of the difficulty is understood. Contractions situated near the anus can be relieved by dilatation. When out of reach, nothing can be done except to confine the patient to a fluid diet, which will have a tendency to produce thin and pulpy stools. Milk and lime-water, beef-tea, eggs beaten with milk, and similar food should compose the diet. For twisting, internal strangulation, and intussusception, the best mode of treatment is distension by means of air or cold water. This remedy is of no account unless used very thoroughly. It is generally necessary to pump into the intestine a very large quantity of air or water. If the patient is a child, it is generally best to place him in a dependent position, with the head downward, as by this means the weight of the water may be made to act most advantageously in relief of the obstruction. Several eminent German physicians depend almost wholly upon this mode of treatment in intussusception.

When symptoms of inflammation occur, as indicated by the pulse, rise of temperature and local pain, ice compresses should be applied to the abdomen continually. The danger of death in these cases is very largely increased by the use of laxatives or purgatives, as remedies of this kind will be sure to increase the difficulty. When the obstruction is produced by accumulations of fecal matter in the rectum or colon, it is generally necessary to remove the obstruction by inserting the finger, handle of a spoon or any convenient instrument. After an opening has been worked through the accumulated mass, a copious injection of warm soap-suds made from castile soap may be made by means of the syphon syringe, or any other convenient instrument. The injected fluid should be retained as long as possible, and then expelled. Repeated injections may be employed if necessary.

PERITONITIS.

SYMPTOMS.—ACUTE: ***Pain in the abdomen; chill or chilliness followed by fever; great tenderness over whole abdominal wall, increased by muscular action and by slight pressure; constipation of the bowels; vomiting; hiccough; patient lies on the back with the knees drawn up; cold, clammy sweats.***

CHRONIC: ***Slight pain in abdomen; obstinate diarrhea; occasional attacks of colic; abdomen rigid, swollen, and tender; emaciation.***

Peritonitis is inflammation of the serous membrane which lines the cavity of the abdomen and covers the intestines. The causes of the disease are the same as those which occasion inflammation of other serous membranes, as of the pleura of the lungs. It frequently also results from perforation, or from inflammation and ulceration of the mesenteric glands.

Treatment.—The acute form of the disease requires absolute rest, together with remedies calculated to lower the inflammatory action. The abdomen should be covered with cold compresses which should be wrung out of ice-cold water and changed every ten minutes. Cool injections into the bowels may also be employed for the same purpose. Some cases are more readily relieved by the application of hot fomentations to the bowels and hot enemas. The treatment should be applied very thoroughly. The diet should be simple, consisting by preference of milk and lime-water, beef-tea, etc. Solid animal food should be withheld, also vegetables. The diet should be very light until convalescence is fully established. For the chronic form of the disease the same general plan of treatment should be followed. Much good may be derived from fomentations applied two or three times a day. For breaking up adhesions which may have formed, the alternate hot and cold applications in the form of compresses, the douche, or spray are an excellent measure of treatment. Daily hot enemas are also useful.

ABDOMINAL DROPSY—ASCITES.

SYMPTOMS:—Abdomen enlarged; skin tense and shiny; a sensation of fluid when felt by the hand; short breath; generally swelling of the lower extremities; weakness; emaciation, especially of the upper part of the body; loss of appetite; sleeplessness; patient cannot lie down on account of disturbance of breathing.

Dropsy of the abdomen is not itself a real disease, being simply a symptom of disease. It is most commonly found in general dropsy, but in this connection we refer to cases in which it is present without general dropsy. These cases are the result either of obstruction to the

portal circulation from disease of the liver, obliteration of the portal vein, or degeneration of the peritoneal membrane, as in cancer or tuberculosis of the peritoneum. The most common cause of abdominal dropsy is hardening or cirrhosis of the liver, or other forms of degeneration of that organ, which most commonly result from the use of alcoholic liquors. Abdominal dropsy should be carefully distinguished from simple accumulations of fat in the abdominal walls, which is very frequent in advanced life in people of a lymphatic temperament, accumulations of gas in the intestines, and, in females, ovarian dropsy We have met with cases in which each one of these conditions has been mistaken for dropsy of the abdomen. The first condition is very easy to distinguish from accumulations of fluid in the abdominal cavity. The same is true of accumulations of gas in the intestines. By simply placing one hand on the abdominal wall and tapping upon one finger with the finger of the other hand, a drum-like resonance will be observed which indicates the presence of gas instead of fluid. Care should be taken, however, to observe whether the resonance extends to the space between the lower ribs and the upper part of the hip-bone. When no fluid is present there is resonance at this point on both sides of the body, but in cases of dropsy of the abdomen the water settles down into this part as the patient lies on his back, the inflated intestines floating and producing a resonance only at the upper part. It is most difficult to distinguish cases of ovarian dropsy or cystic tumor of the ovary from this disease. The best distinctive sign is a reversal of the order just described, the fullness being at the upper part of the abdomen, while resonance is found in the space described between the hip-bone and lower ribs, showing that the fluid is inclosed in a sac separate from the general cavity of the abdomen. In cases in which there is any doubt as to the presence of fluid in the abdominal cavity the question can be easily settled by means of a hypodermic syringe.

It is sometimes difficult to decide which one of the two principal causes of abdominal dropsy is active in any particular case. It may be said, however, that when there are other evidences of disturbed action of the liver it is safe to attribute the dropsy to disease of this organ. Disease of the liver is frequently indicated by dark-colored urine which upon chemical examination is found to contain bile. In cases in which none of these symptoms occur, the dropsy is generally due to degeneration of the peritoneum.

Treatment.—The treatment of ascites should be, of course, to re-

move the cause as far as possible. In many cases, unfortunately, this cannot be done, as in degeneration of the peritoneum and cirrhosis of the liver. Much, however, can be done for the relief of the patient, and not infrequently a cure can be effected. Attention should first be given to the general health of the patient. The diet should be carefully regulated. The food should be nourishing but unstimulating in character, free from fats, condiments, and excessive quantities of sugar, so as to relieve the liver as much as possible in cases in which that organ is chiefly involved. The general regimen of the patient should be strictly in accordance with the rules of hygiene. If he has been accustomed to the use of stimulants or narcotics of any kind, these may be wholly discontinued. To produce absorption of the fluid, tight bandaging of the abdomen and the daily application of electricity afford the best results. An eminent physician recently reported a large number of cures from the application to the abdomen of dropsical patients of a strong faradic current. We have used the same remedy for a number of years with marked success. When the obstruction to breathing becomes so great as to greatly disturb the patient, and the accumulation of fluid is evidently increasing, tapping or aspiration may be resorted to as a means of withdrawing the fluid. The operation itself is a trivial one, attended by no danger whatever, but it has been observed that the patient generally undergoes emaciation much more rapidly after the operation than before, as the fluid is almost certain to return quite rapidly, thus robbing the blood of some of its most valuable constituents and so interfering with the nutrition of tissue. Some physicians recommend that tapping should be deferred until the symptoms have become so urgent as to threaten the life of the patient, but we do not hesitate to perform the operation much sooner, and repeat it if necessary. In most cases, by means of the measures indicated, a return of the dropsy may be either delayed or wholly prevented.

CONSUMPTION OF THE BOWELS—MESENTERIC CONSUMPTION.

***SYMPTOMS.**—Pain in the bowels, more or less constant, sometimes severe, causing the patient to draw up his limbs toward the abdomen to relieve the tension; irregular action of the bowels; alternation of constipation and diarrhea; when the bowels are loose, stools very offensive, abdomen swollen; loss of strength; deep red color of the lips; small ulcers about the mouth; fissures in the lips.*

Consumption of the bowels is by no means so common a disease as is generally supposed, being almost wholly confined to children, adults be-

ing rarely affected, except when suffering with consumption of the lungs also. It is a somewhat obscure disease, and hence has been seized upon by quacks as a means of frightening patients so as to obtain an influence over them. We have had under our care many patients who had previously consulted physicians whose hobby seemed to be consumption of the bowels, and have found in nearly every case that the diagnosis had been "consumption of the bowels" either already present or threatening. In not one case, however, of those referred to, have we found any symptom of this disease. Chronic intestinal catarrh and scrofulous degeneration of the glands of the intestine, are quite likely to be mistaken for mesenteric consumption, and it is undoubtedly the frequency of these diseases which has given rise to the supposed frequency of abdominal consumption.

Treatment.—As in consumption of the lungs, the first attention should be given to the prevention of this disease, which, when well established, is by no means easy of cure. The preventive measures are essentially the same as those mentioned elsewhere for the prevention of consumption, and hence need not be fully recapitulated. They may be briefly enumerated as being an abundance of out-of-door exercise, exposure to sunlight, constant supply of pure fresh air, frequent bathing to secure activity of the skin, proper clothing, protection from colds, and a generous but unstimulating diet. In the case of children, care should be taken to secure milk from healthy cows. A mother suffering with the symptoms of consumption of the bowels should not nurse her child, as she will be very likely to communicate to it the germs of the disease. It should also be borne in mind that cows not infrequently suffer from tuberculosis, and communicate the disease in this way. As consumption is a contagious disease, it is evidently unwise to allow small children to be closely associated with persons suffering from any form of tuberculous affection. Great attention should be paid to the regulation of the diet, the patient being supplied with an abundance of nourishing, simple, and unstimulating food. As the disease is often attended by weakness of the stomach and various disorders of digestion, it is important to give these points prompt and careful attention. The general treatment should be the same as has already been given for chronic catarrh of the bowels and general scrofulous disease. The abdominal pain may usually be relieved by the use of fomentations and the wet abdominal bandage. The bandage should be wrung as dry as possible and covered with a dry woolen cloth. Great care should be taken to keep the extremities warm,

the feet of the patient becoming chilled very quickly especially after bathing. In cases in which there is considerable emaciation and dryness of the skin, an inunction with vaseline, olive-oil, or any other good unguent, is a very efficient and often essential measure of treatment. We have employed various unguents for this purpose, and have been best satisfied with the results obtained from the use of refined Chinese cocoa-nut oil imported from Canton.

DYSPEPSIA.

SYMPTOMS.—Uneasiness at the stomach; flatulence; acidity; heart-burn; water-brash; pyrosis; nausea; vomiting; regurgitation; gripes; colic; weight; pain at stomach; tenderness at pit of stomach; biliousness; coated and fissured tongue; sore mouth; throat ail; sour or other bad taste in the mouth; constipation; diarrhea; unnatural appearance of the feces; sediment in the urine; dry skin; night sweats; nervousness; headache; sick-headache; cold hands and feet; congestion of the head; pain between shoulders or under shoulder-blade; vertigo; disturbances of vision and hearing; drowsiness; sleeplessness; confusion of mind, and even more serious mental disorders.

Dyspepsia may be classified, first, as acute and chronic. One of the most important differences between an acute and a chronic case of indigestion is that acute dyspepsia will cure itself in time, usually in a very short period, by the unaided efforts of nature; while a chronic case of the disease continues from bad to worse, or without material improvement, indefinitely.

Chronic dyspepsia is generally much less active in its symptoms than is the acute form of the disease. It usually begins slowly, insidiously making its advances, and thus for a long time eluding observation, in many instances until well established. This is one reason why the diagnosis of the disease is often very obscure. Very frequently it is overlooked for years, being mistaken for some other disease through the special prominence of certain symptoms, which, as before intimated, may simulate almost any disease.

Basing the classification of chronic dyspepsia upon the most prominent symptoms observed in different cases of the disease, by far the greater part of the number may be included in the following five classes; viz., simple or slow, acid, foul or bilious, painful, and nervous dyspepsia. Each of the classes named has its characteristic symptoms, though any given case may combine the symptoms of one or of each of the different classes.

Causes.—Before mentioning in detail the various causes which may be considered most active in occasioning disorders of digestion, it is important that we call attention to a general principle which applies to all cases of functional disease of the organs of digestion. In the study of digestion in health it is found that the two essential things are secretion and muscular action. So we find, correspondingly, that the two primary morbid conditions are defective secretion and disordered muscular action. The defect in the digestive secretions may be either in quantity or in quality, or may be both combined. The disordered muscular action may be either increased or diminished muscular activity; in the great majority of cases it is the latter condition. The special causes which will be mentioned are more or less active as agents productive of dyspepsia, just in proportion as they disturb these two essential functions of digestion, secretion and muscular action.

Errors in Diet.—There is no room to doubt that errors in diet, in manner of eating, in quantity or quality of food, are by far the most active causes of indigestion in this country, as well as in most others. Among the most prominent of dietetic errors may be mentioned the following: Hasty eating; drinking at meals; hot drinks; cold drinks, ices, etc.; use of cold food; eating too frequently; eating between meals; irregularity of meals; eating when weary; violent exercise just after eating; sleeping soon after eating; late suppers, hot or cold bathing shortly before or soon after eating; overeating; eating too little; unseasonable diet, as the use of highly carbonaceous and heating foods in summer, as fat meats, lard, butter, and excessive quantities of fats at any time; badly cooked food; fried food; pastry; poor bread; fat meats; "rich food"; too free use of sugar and sweet foods; soft food; too many varieties at a meal; condiments, as mustard, pepper, pepper-sauce, cinnamon, vinegar, excess of salt, etc.; pickles; preserves; tea and coffee; alcohol, tobacco, hard water; alkalies, as in the use of baking powders, soda, saleratus, ammonia, etc.; decayed food; adulterations exposing the stomach, as well as the whole system, to the deleterious action of lead, zinc, arsenic, copper, sulphuric acid, etc., etc.; use of indigestible substances, as of clay, chalk, slate, and sundry other substances equally innutritious and indigestible in character.

Among causes not related to food or diet may be mentioned, Pressure upon the stomach, mental worry, care, and anxiety, mental im-

pressions; drugs; sexual abuses; disease of other organs; worms; inherited dyspepsia; electrical and other meteorological changes, and numerous other influences which are as yet but imperfectly understood

General Treatment.—As dyspepsia is not usually a fatal disease, thousands of people allow themselves to suffer from its pains and inconveniences for years without making serious efforts to recover. If anything is done, it is most likely to be a trial of some quack nostrum advertised on the fence or heralded in the daily newspaper as a "sure cure" for indigestion, its merits certified by a long list of fictitious or purchased testimonials. Every effort of this sort, of course, makes the disease worse in the end, even though there may be apparent temporary relief. Failing in several attempts, perhaps, the sufferer settles down in despair to the melancholy conclusion that he must remain as he is, that his malady is incurable; and so he lives along in a wretched way until consumption, that dread disease which often follows close on the heels of the hydra-headed malady we are considering, claims him as a victim and ends his misery.

The importance of giving to the treatment of this disease most serious attention is further seen by the fact that many organic affections which when once well established are impossible to cure, have their origin, in many cases, in indigestion. This is undoubtedly true of tuberculous degeneration of the lungs and other parts, together with other degenerative changes. The same may also be said of various nervous affections. This accounts, in part at least, for the almost constant association of impaired digestion with consumption, and with various organic affections of the liver, kidneys, and other organs. In most of these cases, the best, and often the only hope for a cure, lies in the treatment and cure of the digestive disorder; and, without doubt, if this could be accomplished sufficiently early, many cases of hopeless organic disease of the lungs and other organs might be prevented altogether. Although each variety of this disease, and indeed each individual case, requires a special plan of treatment in some respects different from what is required by any other variety or case, there are certain measures which are equally applicable to nearly all classes and cases of this disease. To these we will now call attention.

Removal of Causes.—If the dyspeptic would recover, he must seek carefully for each one of the causes of his disease, and carefully remove them. It is of no use to hope for recovery without doing this. If the cause is in the manner of eating, let him take care to eat prop-

erly. If he has erred in eating too much, or in eating improper articles of food, let him make a thorough reform in this regard. If the difficulty has been in overwork, too much anxiety, too little time to digest, or too sedentary habits, he must get away from his care, his business, his writing-desk, and seek health in out-of-door exercise, coupled with happy, cheerful associations. The careworn, burdened mother must have relief from the tedium of her routine life. A journey, a visit to a friend, or some other means of diversion, must be adopted. Whatever the cause has been, it must be removed. No medicine known, no matter how potent, nor how skillful its administration, can antidote the effects of the transgression of physical laws. Nature is inexorable. She demands obedience, and will not be put off with any sort of subterfuge.

To the great army of dyspeptics, to which almost the whole American nation belong, and a large proportion of other nationalities, we would say, You can get well if you wish to, if you care enough about health to make the effort, and we are about to point out the way; but the man who has been a dyspeptic for years must not expect to get well in a week, nor in a month. He must be willing to persevere in his efforts after he has started in the right direction, never relaxing for a moment his determination to get well. He must also make up his mind to deny his appetite of all things harmful, to wage a constant warfare against the things which have made him ill.

Hygienic Remedies.—In the treatment of this disease, attention to hygiene and the application of what are by some termed "hygienic remedies," are of first importance. Indeed, it is by these agents that nature is aided in her restorative work more than by any others, and upon these the most skillful and successful of those who have given great attention to the treatment of the functional diseases of the stomach find it safest to rely. Undoubtedly there are cases and circumstances which may be benefited, and the work of cure hastened, by the employment of medical agents; nevertheless we feel quite confident that the abuse of drugs is so very great, and has been the direct cause of so many bad cases of confirmed dyspepsia, that it would be far better to do without them altogether than to use them as they are not infrequently employed. An eminent writer on this subject, in referring to the treatment of dyspepsia says, "My main object in the treatment is to prevent the sufferers from resorting to drugs, which, in such cases, not only produce their own morbid conditions, but also confirm those already existing."

The extensive and often habitual use of alkalies for acidity, of purgatives for constipation, nervines and opiates for sleeplessness, and after-dinner pills to goad into action the lagging stomach, has been a potent factor in the production of a large class of most inveterate dyspepsias. This kind of treatment for dyspepsia cannot be too much deplored, nor too often discouraged. Especially to be discountenanced is the wholesale employment of "liver pills," "stomach tonics," "anti-bilious pills," "bitters," and the whole genus of quack nostrums and proprietary drugs.

Diet.—In the treatment of this disease, proper diet and regimen are of first importance. The diet is of special importance. It is necessary, however, that it should be most carefully adapted to the wants of each individual case, as nothing could be more true than the adage that "what is one man's meat is another's poison" when referring to cases of dyspepsia. The common plan of recommending some special dietary to all dyspeptics indiscriminately is a most pernicious one. We hear much of the grape cure, the beef cure, the fat cure, the cod-liver-oil cure, the milk and sundry other special diet cures, of dyspepsia, as well as the vegetarian cure. Each of these diets may be of special service to some special case, but all are totally unfitted for all cases alike. We have seen many persons become dyspeptics by the adoption of a vegetarian diet; but we have seen many more cured by exchanging a diet of fat meats, sweets, etc., for a plain diet of fruits, grains, and vegetables.

It is not an easy matter to induce individuals suffering with dyspepsia to deny the demands of appetite. In many cases, the will is weakened by long-continued disease, and the appetite is perverted, so that the patient loses self-control, and thus himself stands as the most difficult obstacle in the way of his recovery. It must be insisted, however, that the directions to be given shall be followed implicitly. In no other way can a bad dyspeptic hope for recovery. All but one or two requirements may be conformed to, but the failure in one particular may be sufficient to make all other efforts useless.

Although, as before remarked, there is no such thing as a universal diet for dyspeptics, there are certain articles of diet that must be discarded by all persons who have a weak digestion, and certain dietetic rules which must be conformed to by all. To the most important of these we will now call attention.

1. Eat slowly, masticating the food very thoroughly, even more so, if possible, than is required in health. The more time the food spends in the mouth, the less it will spend in the stomach.

2. Avoid drinking at meals; at most, take a few sips of warm drink at the close of the meal, if the food is very dry in character.

3. In general, dyspeptic stomachs manage dry food better than that containing much fluid.

4. Eat neither very hot nor cold food. The best temperature is about that of the body. Avoid exposure to cold after eating.

5. Be careful to avoid excess in eating. Eat no more than the wants of the system require. Sometimes less than is really needed must be taken when digestion is very weak. Strength depends not on what is eaten, but on what is digested.

6. Never take violent exercise of any sort, either mental or physical, either just before or just after a meal. It is not good to sleep immediately after eating, nor within four hours of a meal.

7. Never eat more than three times a day, and make the last meal very light. For many dyspeptics, two meals are better than more.

8. Never eat a morsel of any sort between meals.

9. Never eat when very tired, whether exhausted from mental or physical labor.

10. Never eat when the mind is worried or the temper ruffled, if possible to avoid doing so.

11. Eat only food that is easy of digestion, avoiding complicated and indigestible dishes, and taking but one to three kinds at a meal.

12. Most persons will be benefited by the use of oatmeal, wheat meal, or graham flour, cracked wheat, and other whole-grain preparations, though many will find it necessary to avoid vegetables, especially when fruits or meats are taken.

On pages 927, 372, 373, may be found tables showing the length of time required for the digestion of various foods, the quantity necessary for health, suggestions for the proper combination of foods, the most easily digestible articles, etc. They will be found of great value in the treatment of this disease if carefully studied. We would in addition offer the following as practical suggestions:—

1. The flesh of wild game is usually more easy of digestion than that of domestic animals, and is less likely to be diseased.

2. Fats are injurious to dyspeptics almost without exception. If eaten at all, butter is the only form admissible, and this should never be eaten cooked, but cold, on bread.

3. Broiling is the best mode of cooking meat.

4. "High" meat should never be eaten, as it has begun to decay.

5. Meat and vegetables do not agree well together.

6. Fruit and vegetables often disagree. Some cases must be required to discard vegetables altogether.

7. Milk does not agree well with either vegetables or fruits.

8. Milk is easier of digestion when boiled than in its natural state.

9. Warm food is easier of digestion than cold, with the exception of fermented bread, which should be eaten stale.

10. Cold meat and meat that has been "warmed over" are not easy of digestion.

As it is important to all persons with weak digestion to know what articles are easy of digestion and what are not, we give here the following

TABLE

SHOWING THE LENGTH OF TIME REQUIRED FOR THE DIGESTION OF VARIOUS ARTICLES OF FOOD IN THE STOMACH, ACCORDING TO THE OBSERVATIONS OF DR. BEAUMONT ON THE STOMACH OF ALEXIS ST. MARTIN.

	H.	MIN.
Rice, boiled,	1	00
Sago, boiled,	1	45
Tapioca, boiled,	2	00
Barley, boiled,	2	00
Milk, boiled,	2	00
Milk, raw,	2	15
Venison Steak, broiled,	1	35
Turkey, domestic, roasted,	2	30
Turkey, domestic, boiled,	2	25
Goose, roasted,	2	30
Lamb, fresh, broiled,	2	30
Eggs, fresh, hard boiled,	3	30
Eggs, fresh, soft boiled,	3	00
Eggs, fresh, fried,	3	30
Eggs, fresh, raw,	2	00
Eggs, fresh, whipped,	1	30
Custard, baked,	2	45
Codfish, cured, dry, boiled,	2	00
Trout, Salmon, fresh, boiled,	1	30
Bass, striped, fresh, broiled,	3	00
Salmon, salted, boiled,	4	00
Oysters, fresh, raw,	2	55
Oysters, fresh, roasted,	3	15
Oysters, fresh, stewed,	3	30
Beef, fresh, lean, rare, roasted,	3	00
Beef, fresh, dry, roasted,	3	30
Beef, steak, broiled,	3	00
Beef, with salt only, boiled,	2	45
Beef, with mustard, etc., boiled,	3	30
Beef, fresh, lean, fried,	4	00
Beef, old, hard, salted, boiled,	4	15
Pork-steak, broiled,	3	15
Pork, fat and lean, roasted,	5	15
Pork, recently salted, fried,	4	15
Mutton, fresh, roasted,	3	15
Mutton, fresh, broiled,	3	00
Mutton, fresh, boiled,	3	00
Veal, fresh, broiled,	4	00
Veal, fresh, fried,	4	30
Fowls, domestic, boiled,	4	00
Fowls, domestic, roasted,	4	00
Ducks, domestic, roasted,	4	00
Duck, wild, roasted,	4	30
Butter, melted,	3	30
Cheese, old, strong, raw,	3	30
Soup, marrow bones, boiled,	4	15
Soup, beans, boiled,	3	00
Soup, barley, boiled,	1	30
Soup, mutton, boiled,	3	30
Green corn and beans, boiled,	3	45
Chicken soup, boiled,	3	00
Oyster soup, boiled,	3	30
Hash, meat and vegetables, warmed,	2	30
Beans, pod, boiled,	2	30
Bread, wheaten, fresh, baked,	3	30
Bread, corn, baked,	3	15
Cake, corn, baked,	3	00
Dumpling, apple, boiled,	3	00
Apples, sour and hard, raw,	2	50
Apples, sour and mellow, raw,	2	00
Apples, sweet and mellow, raw,	1	30
Parsnips, boiled,	2	30
Carrot, orange, boiled,	3	15
Beet, boiled,	3	45
Turnips, flat, boiled,	3	30
Potatoes, Irish, boiled,	3	30
Potatoes, Irish, baked,	2	30
Cabbage, head, raw,	2	30
Cabbage, head, boiled,	4	30

Exercise.—This is of first importance as a general renovator of vital action. The secretion of gastric juice is, under ordinary circumstances, proportionate to the amount of nourishment which the system is prepared to assimilate. Exercise creates a demand for food, and so stimulates both assimilation and secretion. The best forms of exercise are those which will secure the most uniform activity of the several parts of the muscular system. Riding, walking, rowing, and especially horseback riding, are to be recommended as excellent. Gymnastic exercises and the judicious use of the "health lift" are also good; and for persons who from lack of time, or other cause, cannot adopt the other methods, these may be considered as almost indispensable. Such exercises as running, jumping, base-ball playing, "walking matches," and other violent exercises, cannot be recommended. Trapeze exercises must also be discountenanced on the same grounds. Agriculture, especially the raising of small fruits and the cultivation of flowers, cannot be too highly recommended as forms of exercise for dyspeptic patients. For that large class of sallow-skinned, weak-backed, dyspeptic young ladies who have been made dyspeptics by idleness and too much "coddling" by fond mothers, who sacrifice themselves to the monotonous drudgery of the cook-stove and the sewing-machine, and their daughters to sentimental idleness and fashionable piano-thrumming,—for the indigestion of these poor victims of mistaken maternal care, the varied exercise necessitated by domestic labor is a most admirable panacea. And for the gaunt, hollow-cheeked, sunken-eyed, slab-sided, cigar-worshiping young man whose chief occupation is cultivating a mustache, smoking cigarettes, and swinging a gold-headed cane, a little wholesome experience in earning a subsistence by the sweat of the brow, instead of leaning upon rich relatives, will prove a specific for "softening," which begins in the brain and extends to every part of the system.

Exercise before breakfast, while excellent for some, cannot be too much condemned for others. Persons who suffer with "goneness," "faintness," "sinking," and allied pains when the stomach is empty, and especially in the morning, must avoid exercise to any considerable extent before eating. Disregard of this rule occasions loss of appetite and weakening of digestion. Persons who are very weak must also avoid exercise before eating in the morning.

As before remarked, only gentle exercise can be taken soon after eating, or immediately before, without injury. Persons who feel a con-

stant "sinking" or weakness in the stomach and bowels will derive benefit from wearing about the body a broad band of flannel.

Rest and Sleep.—It is of great importance that sufficient sleep be obtained, though sometimes this seems impossible on account of the nervousness occasioned by this disease. It is generally best to retire early, but there is no virtue in getting up in the morning at an early hour unless the body is recuperated by rest. Sleep must be obtained, and on many accounts it is better to take it in the fore part of the night; but if not secured then, it should be taken at other times. Sleeplessness induced by anxiety is often a cause of dyspepsia. It is a great obstacle in the way of successful treatment.

Some cases of dyspepsia require a large amount of rest, besides the hours allotted to sleep. We have had a number of cases in which we found absolute rest for an hour or two after each meal essential to induce good digestion. Some cases require the maintenance of the recumbent posture at least three-fourths of the time. In such cases the amount of exercise essential to good assimilation must be secured by means of passive exercise, as massage, or Swedish Movements.

Traveling.—Many physicians are in the habit of recommending patients upon whom they have exhausted their skill, to seek health by traveling. Thousands annually leave their homes and at great expense visit various watering-places, mineral springs, etc., in this country and Europe, in consequence of this advice. Some return much benefited; the majority are no better except from rest. This is due to the fact that traveling does not remove the real cause of the difficulty, and may often increase it. In general, while traveling it is next to impossible to secure either regularity of diet or other habits, or a proper quality of food. This, of course, in great degree counteracts the benefit to be derived from gentle exercise and freedom from care.

The advantage of special climates is undoubtedly overrated in a very great degree, though a cool climate may generally be considered as best, especially for those suffering with "bilious dyspepsia." With nervous dyspeptics, a warm climate seems to agree better, as it occasions less disturbance of the circulation.

Mental and Moral Treatment.—This is too important a part of a successful plan of treatment to be neglected. The gloomy despondency must be steadily combated by a determination to be cheerful. The disposition to fret and worry, and to dwell upon the unpleasant or painful

features of the disease, must be fought against with firmness and resolution. The dyspeptic who allows his mind to constantly dwell upon his stomach, and who speculates upon the probabilities respecting the digestion of each morsel of food as he swallows it, will be certain to remain a dyspeptic. This unfortunate tendency on the part of dyspeptics is a great impediment to recovery in many cases. The mind must be diverted from self as much as possible at all times, and especially while eating. The habit many dyspeptics have of talking constantly about themselves, sometimes amounting almost to a monomania, cannot be too strongly condemned. Too great solicitude about the stomach, diet, etc., is worse than none at all.

Dress.—In addition to wearing the clothing loose, so as to give every organ perfect freedom of action, it is of greatest importance that the extremities be kept thoroughly warm. Cold hands and feet are very common with dyspeptics. It will generally be found necessary to wear flannel under-garments throughout the year, graduating the thickness to the temperature. It will sometimes be necessary to change the clothing once or twice a day to accomplish this in extreme cases of disturbed circulation. Great pains must be taken to keep the extremities warm.

General Measures of Treatment.—The general indications for treatment are, 1. To increase the general vigor of the system by tonic remedies; 2. To balance the circulation; 3. To increase the demand for food, and thereby improve the quantity and quality of the digestive juices. This can be best accomplished by the following means in addition to the measures already mentioned:—

Baths.—Water baths are of course useful to keep the skin free from impurities and to increase its activity. Too frequent bathing, however, will be found harmful, as will also, in most cases, bathing in cold water, especially in the morning, before breakfast. The latter practice has been much recommended, and has been employed by many. We have heard people boast of having taken a cold shower-bath every morning, summer and winter, for years. Some even went so far as to claim to find enjoyment in springing out of bed on a winter morning before daybreak and after running a few rods, with no protection from the frosty air and snow, taking a plunge in a lake or stream through a hole cut in the ice for the purpose. Hundreds have been greatly injured by such foolish practices. A person in pretty good flesh may take with advantage a hand bath with tepid water, every morning upon rising. But the average dyspeptic will not do well to bathe so often. Two or three

times a week are enough in summer, and half as frequently in winter.

For those who are quite gross, with inactive skins, sluggish livers and bowels, there is nothing better than the Turkish bath when given with discretion. This is one of the most active stimulants to activity of the skin which can be employed. The vapor and Russian bath, and the wet-sheet pack, rank next in value. These measures must not be employed too frequently, however, as they are powerful depletents when injudiciously used, though most energetic vital stimulants if properly employed.

The tepid or cool spray is also a valuable remedy used prudently. Sea bathing, so much lauded, is often overdone. If the patient is chilled in taking the bath, it is decidedly harmful.

The vigorous rubbing and manipulation of the skin and muscles which properly follow the baths referred to, are as beneficial as the baths themselves, and are especially needful to secure a good reaction.

Inunction.—To encourage the surface circulation, the oil bath, or inunction, is a most admirable remedy. It is especially serviceable in cases in which there is dryness of the skin. Under the influence of inunctions of fine olive-oil, vaseline or refined cocoa-nut oil, applied one to three times a week, the skin grows moist, supple, and warm, and the patient will usually increase in weight as well as improve in color and in general vigor. In weakly patients who are unable to take sufficient exercise, this remedy is of great value, especially when coupled with massage, a system of rubbing which in some cases secures surprising results. Simple dry-hand rubbing morning and night is useful, and often seems to benefit the patient more than anything else that can be done.

Water-Drinking.—In cases of obstinate constipation, due to inactivity of the liver, water-drinking is of advantage, when the stomach will bear it. The quantity of water to be taken must vary from a single glassful taken before breakfast to a half-dozen glasses a day in the intervals between the meals. Repeated experiments by the most eminent physiologists have shown that the liberal use of water as a beverage is a great promoter of vital activity, not only of the liver but of other vital organs. This must not be carried to excess, and must be discontinued if it disturbs digestion.

Special Measures of Treatment.—The special indications to be met by treatment in dyspepsia are, 1. To increase the quantity and quality of the gastric juice, and of the other digestive fluids: 2. To

increase the muscular activity of the stomach and bowels; 3. To palliate the various other symptoms which grow out of derangements of these two important functions.

To Increase the Secretion of Gastric Juice.—Any measure which will improve the tone of the stomach will accomplish this result. We may mention, as useful for this purpose,

1. Taking a few sips of cold or hot water just before or just after eating. A larger quantity may be taken half an hour before a meal with good effect. A few sips of hot drink taken an hour after eating is a very useful measure in slow digestion

2. The application of hot fomentations to the pit of the stomach stimulates the activity of the gastric glands. Alternate hot and cold applications made to the portion of the spine just back of the stomach has a similar effect, and often in a remarkable degree. In some of the worst cases a fomentation applied a half-hour after each meal will have a most decidedly beneficial effect. The alternate hot and cold spray or douche may be employed instead of fomentations and compresses, and with greater benefit in some cases. The application should be at quite extreme temperatures, and alternated every few seconds. It should not be continued more than two or three minutes. Care must be taken to avoid chilling the patient. If the douche cannot be employed, an alternate hot and cold rubbing may be substituted, applying the heat and cold with cloths wrung out of hot and cold water alternately. A piece of ice wrapped in a thin cloth is a very good means of applying cold by rubbing.

3. The application of fomentations night and morning, and wearing a warm abdominal compress through the night, or for a few hours after each meal, are measures of very great utility. Moist warmth applied to the surface is a powerful stimulant of secretion in the stomach, as well as in the liver and other secreting organs.

Measures to Increase Muscular Action.—The measures just described are equally useful in exciting muscular activity. In addition may be mentioned gentle manipulation of the bowels, or kneading of the abdomen, especially its upper portion. By this means the local circulation is stimulated, and the natural muscular action of the bowels is both imitated and encouraged. This is an excellent remedy, and can be employed to advantage each night and morning, and for half an hour or more after each meal.

If the patient is able, he should himself make a practice of knead-

ing and percussing the abdomen for fifteen or twenty minutes night and morning. This is a powerful stimulus of muscular activity. Many years ago a quack doctor in New York City made a fortune by curing dyspeptics with this mode alone. He put every patient under an oath of secresy, and required certain wholesome restrictions of diet, which of course aided in the cure.

Flatulence.—Stomach flatulence, occasioned by the formation of carbonic acid gas, may usually be relieved by swallowing a small quantity of quite hot water and applying hot fomentations to the stomach with gentle kneading. A little camphor, peppermint, or winter-green added to the hot water increases its efficiency. Sometimes gulping a small quantity of air will liberate the imprisoned gas by causing relaxation of the muscular fibres at the lower end of the œsophagus. Flatulence of the bowels, together with the pain which sometimes accompanies it, is relieved in the same way. Occasionally a hot sitz bath for ten or fifteen minutes, at 100° to 110°, is required. A copious warm enema will be required in some cases which are accompanied by obstinate constipation. The employment of freshly burned and pulverized charcoal taken in capsules is often an effective remedy for flatulence. Charcoal crackers are useful, though not so efficient, for the same purpose.

Acidity.—One of the best remedies for acidity, and one which is likely to do no harm while it does much good, is pulverized charcoal. It must be very finely pulverized, being sifted through a cloth, must be of the best quality, and fresh. That made of boxwood or cocoanut shells is best. It may be taken in powder, in doses of a half teaspoonful, with water; but the dry powder, taken in capsules, is best. Charcoal may be combined with the food, in crackers, rolls, biscuit, and other articles; and when thus used is often very efficient in preventing sourness; but its value is greatly lessened by mixture with other substances. When old it is almost valueless. As large a quantity as two or three ounces has been taken after a meal without injury.

Heart-burn may be treated as directed for acidity.

Vomiting.—When present, this symptom is sometimes very troublesome. If there is evidence from other symptoms that there is something in the stomach which needs to be expelled, the efforts of nature should be encouraged by copious draughts of tepid or milk-warm water, which will lessen the painful retching, as well as secure thorough emptying of the stomach. When the matters vomited give no evidence of sourness or decomposition, and the symptom is evi-

dently due to nervous conditions or to an irritable state of the stomach, a few sips of hot water will usually afford relief, especially if coupled with a hot fomentation over the stomach. In cases which are not thus relieved, ice pills, or small sips of iced water, with cold to the stomach and warm to the spine, will almost always succeed. In bilious vomiting, when the matters vomited are of a green color, mild acids, as lemon or lime juice, will be found excellent, sometimes giving almost instant relief. The same remedies recommended as palliatives of vomiting are the proper remedies for nausea. Sometimes electricity will give prompt relief when all other measures fail.

Constipation.—Inactivity of the bowels is often one of the most troublesome difficulties with which the dyspeptic has to contend. Two of its most potent causes we have not before mentioned, but call attention to them here as they have an important bearing on treatment; viz., the use of purgatives, and carelessness respecting the observance of the calls of nature. The latter cause is especially common with women, particularly those who reside in the country, where accommodations for the purpose are by no means so convenient as in the larger cities, where indoor conveniences are almost universal. With most people, the bowels naturally move in the morning, before or just after breakfast. If the duty is neglected when it should be performed, the bowels become in some degree tolerant of their contents, so that the call is less vigorous; and the neglected organs may become so dormant that they may cease to demand relief. The most obstinate cases of constipation are produced in this way.

The proper measures for the relief of constipation have already been given elsewhere. See pages 912 and 913.

Other symptoms which are present in dyspepsia in common with other diseases of the digestive organs, as pain, hiccough, foul breath, unnatural appetite, etc., are considered in the section devoted to symptoms at the close of the section on the diseases of the digestive organs. Symptoms dependent upon derangement of the nervous system, the circulation, etc., are dwelt upon in their proper connections.

We will now point out with greater definiteness than heretofore the distinguishing features of the several forms of the disease, and the general line of regimen and treatment necessary to effect a cure in each class of cases.

ACUTE DYSPEPSIA.

SYMPTOMS.—Weight, fullness, or pain at the pit of the stomach; nausea and perhaps vomiting, or diarrhea; usually more or less fever; pain in the head; prostration; coated tongue; unpleasant taste in the mouth; generally little or no appetite.

Acute dyspepsia, when accompanied by considerable fever, is often termed "gastric fever," an incorrect term, however, as the fever is only a symptom of the local disease. In severe cases there is an actual catarrh of the stomach, an affection which has been already described.

Causes.—Most cases of acute dyspepsia are the result of excess in eating, taking food at an unseasonable hour, or partaking of very unwholesome and indigestible substances, or the accidental ingestion of some highly irritating substance, as poisoned or decayed food, or some similar irritant.

Treatment.—The most that is needed in the majority of cases is abstinence from food for twenty-four hours, and the use of only the most simple foods, as boiled rice, oatmeal gruel well boiled, and similar food, for two or three days afterward. Animal food should be abstained from altogether, as the stomach is unprepared to digest such food. In addition to regulation of the diet, the patient may be benefited by some simple measures of treatment. When there is nausea, give copious draughts of warm water to encourage vomiting, so that the stomach may be thoroughly evacuated of its irritating contents. When the stomach is emptied of solid matter and the vomited matters become wholly fluid and assume a yellow or green color, due to the presence of bile, the vomiting should be checked by the use of ice or iced water, which the patient should be allowed to swallow in small quantities. Sometimes ice applied over the stomach externally secures prompt relief, but generally hot fomentations secure the best results. The hot applications should be made thoroughly, as hot as the patient can well bear, and frequently renewed. If they give relief, they should be continued several hours, the stomach being constantly covered with a warm moist flannel compress. It is also well to give a large, warm water enema. If there is pain in the bowels, the water employed for the enema should be as hot as can be borne comfortably, and the enema should be as large as the patient can retain, for which reason it should be administered slowly, with the patient lying upon his back.

The use of purgatives for the relief of acute dyspepsia, especially

the employment of some preparation of mercury, is much to be deprecated. While these remedies often seem to give relief, the same relief and greater may be obtained by other means which are infinitely superior because perfectly harmless, while those mentioned almost invariably aggravate the disease in the end, making its recurrence more frequent.

SIMPLE DYSPEPSIA, OR SLOW DIGESTION.

SYMPTOMS.—Sensation of having eaten too much, when only a small amount has been taken; weight and oppression an hour or two after eating; appetite fair, though patient often does not care for food until he begins to eat; flatulence of stomach, with tasteless and odorless eructations; often pain between shoulders or beneath shoulder-blade; in some cases pain in region of heart; palpitation, often occurring in the night; disturbed and unrefreshing sleep; tongue foul in morning and bad taste in mouth; bowels usually constipated; unnatural sleepiness, especially after meals; lack of energy; symptoms all aggravated by a hearty meal.

This affection is often the cause of what is mistaken, even by physicians, for softening of the brain. It may also be mistaken for heart disease, great alarm being not infrequently created by the occurrence of severe palpitation in the night, suddenly awakening the patient from sleep with an impression of impending death. Slow digestion is the most common of all forms of dyspepsia, and many people suffer from it without understanding the real nature of their disease.

Causes.—The disease may be caused by any of the numerous causes of dyspepsia which have been enumerated. It is more common in men than in women, and especially affects sedentary persons and those nervous individuals who eat rapidly, swallowing their food without proper mastication. It is also common in persons whose teeth are defective. Its immediate cause is deficient activity of the muscular walls of the stomach and intestines, and also deficient quantity or quality of gastric juice.

Treatment.—Slow digestion is benefited by the two-meal plan of eating, as by this means the stomach is given more time for its work. Six or seven hours should intervene between the meals. The more closely the patient confines himself to the articles included in the table of foods easy of digestion, given on page 736, the better progress he will make. The special measures of treatment useful are those described as useful to increase the secretion of gastric juice and muscular action in the stomach and bowels.

ACID DYSPEPSIA.

SYMPTOMS.—Same as in simple dyspepsia, exaggerated; particularly heart-burn; regurgitation of very sour liquid from the stomach; sour eructations; tongue coated white, usually fissured transversely, flabby, and showing marks of teeth at the edges; sour taste in mouth, causing rapid decay of the teeth; grinding of teeth at night; bowels loose or constipated; reddish sediment in urine; usually pain at pit of stomach, and soreness on pressure.

Patients suffering with this form of dyspepsia are usually very thin and bloodless. Occasionally, however, we meet a case of the opposite kind, in which there is an abundance of tissue, though of a loose, flabby texture. Starchy food, sugar, fruits, and especially vegetables of all kinds, cause great increase of acidity and heart-burn. In some cases, even bread and all sorts of preparations from grains will disagree. Sugar, or any food containing it, will give rise to great distress. A meal consisting of animal food almost entirely, may be digested without difficulty, though milk frequently sours.

Causes.—Same as those of slow digestion, with which it usually begins. The digestion being very slow, portions of fermenting food remain in the stomach from one meal to another, so that acidity becomes habitual. Women usually suffer from acidity more than men.

Treatment.—Acid dyspepsia is aggravated by the use of starchy foods and those containing sugar. Vegetables must be discarded for a time. Sugar and all articles containing it must be wholly discarded. The idea many people have that sugar neutralizes acids, is quite a mistake. The grains can be taken better than starchy vegetables, such as potatoes. Often fermented bread cannot be eaten without distress. Aerated bread, or light unleavened bread in the form of rolls, crisps, or crackers,* is much preferable. Toasting until crisp and slightly brown renders bread much less likely to sour. Fermented bread should never be eaten until it is a day or two old. The measures suggested for the relief of acidity must be adopted, together with the same measures of treatment recommended for simple dyspepsia.

BILIOUS OR FOUL DYSPEPSIA.

SYMPTOMS.—Those of slow digestion with occasional acute attacks in which there is loss of appetite; nausea and vomiting or regurgitation of bile; undefined distress or

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* Recipes for this kind of bread and many other wholesome foods for dyspeptics will be found in a work by the author, entitled, "Healthful Cookery:" Good Health Pub. Co., Battle Creek, Mich.

uneasiness at the stomach; soreness under lower border of ribs on right side; bowels sometimes constipated, often loose; bitter taste in mouth; tongue coated, usually creamy or yellowish color; fetid eructations; throbbing pain in forehead and temples, often described as "splitting;" pain in eyes; countenance sallow.

The term "bilious" is used to distinguish this form of indigestion, not because either the liver or the bile is the immediate cause of it, but because of the bilious vomiting and jaundiced appearance of the skin which usually occur in this class of cases. This is what is generally known as "biliousness." Acute dyspepsia of the same sort is termed "a bilious attack," or "sick-headache." This is not real sick-headache, however, as it is often termed, that difficulty being of a neuralgic character, and affecting only one side of the head at a time.

As in acid dyspepsia, this form of indigestion differs from slow digestion chiefly in the exaggeration of the morbid conditions present in that disease. Digestion being still slower than in acid dyspepsia, the characteristic symptoms occur more remote from the time of eating. The usual time for the appearance of the most marked symptoms is the morning, before breakfast. Headache, great flatulence, a very foul tongue, a bitter taste in the mouth, with nausea and finally vomiting of undigested and partially decayed food in a very foul state, indicate the inactivity of the digestive organs present in this form of dyspepsia. When vomiting is continued, bile is generally expelled, the duodenum becoming affected and taking part in the expulsive action. Diarrhea often accompanies, and in some cases replaces, the vomiting.

Owing to this thorough clearing out of the stomach and bowels, these attacks do not occur at very brief intervals. They are often periodical, however, recurring sometimes as often as once or twice a week, and again not more often than once in two to four weeks.

Farinaceous foods give much less trouble than meats, especially fat meats. Vegetables eaten with fat, pastry, oily nuts, meat which has been kept too long, sometimes eggs, especially those not perfectly fresh, with albuminous and fatty foods generally, increase the symptoms peculiar to bilious dyspepsia, and bring on the attacks.

Causes.—This form of dyspepsia, like the preceding, grows out of slow digestion, a form of decomposition known as *butyric acid* fermentation taking place instead of the acetous fermentation present in acid dyspepsia. The most common exciting causes are the use in excess of sugar and sweet foods, fats, flesh food, tea and coffee, tobacco, and alcoholic liquors. The attack is usually excited by overeating, eating

warm bread and butter, sweet foods, fried foods, rich pastry, and similar foods.

Treatment.—In this form of indigestion, the greatest simplicity in diet is necessary. Complicated dishes, stews, etc., must be wholly interdicted. Pastry is practically synonymous with poison, for these patients. Fats, as butter, lard, etc., and fat meats, together with nuts and fruits containing oils, must be entirely discarded. Sweets of all sorts are about equally injurious. Many persons suffering with this form of dyspepsia can trace the cause of the attack to eating freely of sugar or sweetmeats.

Vegetables, being difficult of digestion, are very productive of gas, and hence should be for a time avoided by persons subject to bilious dyspepsia. Grains, as oatmeal, wheat meal, rice, and ripe fruits, are adapted to this class of cases. Meat should be taken sparingly, and in many cases can be advantageously discarded altogether for a time. The other treatment should be that recommended for acute dyspepsia at the time of the attacks, to be followed by the treatment suggested for slow digestion. The most important measure of treatment is the regulation of the diet and the avoidance of all the causes of the disease.

PAINFUL DYSPEPSIA.

SYMPTOMS.—Most characteristic is pain at the pit of the stomach, with tenderness on pressure just at the lower end of the sternum; also tenderness on right side under lower border of ribs; pain in stomach, described as "tearing," "burning," "gnawing," or "rasping," coming on soon after taking food, and ceasing when digestion is completed; when due to congestion of mucous membrane, all-gone feeling when stomach is empty, relieved by bland food; pulsation at pit of stomach or below.

Causes.—Painful dyspepsia may be developed from acid or bilious dyspepsia. It is most often the result of gastritis. Not infrequently the congestion to which this pain is sometimes due is caused by compression of the abdominal organs, obstructing free circulation. Hence, women who wear corsets are very liable to be affected by it, though they will rarely admit the cause, and still more rarely can be induced to remove it. It is also sometimes due to the pressure of some firm object against which the individual leans in his daily business; in this way various trades are productive of painful dyspepsia.

Treatment.—Meat and all coarse vegetables must be carefully avoided in this affection. Preparations from the grains, as farina, cornstarch, well-boiled oatmeal porridge, and other farinaceous substances, as

sago, tapioca, etc., agree best. It should be borne in mind, however, that in this class of cases such articles as cracked and crushed wheat, samp, graham bread, and other foods containing the coarser parts of the grain, are likely to do harm, the outside woody parts of the grain acting as a mechanical irritant to the sensitive mucous membrane of the stomach. It is this fact that has given the seeming occasion for a class of ignorant individuals who have mercenary ends to serve, to declaim so loudly against the use of whole-wheat flour. The fact that the coarser parts of the grain can be removed with advantage for this class of cases is no evidence against its utility in many other forms of indigestion.

In extremely bad cases, it is often necessary to put the patient on extremely simple diet. In cases of this sort, nothing generally answers the indications so well as milk. It should be taken fresh as possible, and should be given to the patient about as warm as can be taken with comfort, unless there is considerable fever, when it may be taken in small quantities iced. In extreme cases, the irritability may be so great that the food will be rejected if taken in any considerable quantities. In these cases, it becomes necessary to take the food, milk by preference, in very small quantities often repeated. If necessary, so small a quantity as one or two spoonsful may be given once an hour at first, gradually increasing the quantity and the intervals, until the necessary quantity is taken at the usual intervals for meals. Then a little well-boiled and strained oatmeal or graham gruel may be added, the quantity being increased until the patient can bear semi-solid food. Many lives have been saved by this plan when death seemed imminent from inability to digest sufficient nourishment. In some cases, we have found even milk intolerable, and have then secured the most successful results by the use of the white of egg beaten to a froth, and made palatable by the addition of a few drops of lemon juice or wine. In the worst cases we have even found the employment of nutritive enemata necessary for a short time until the irritability of the stomach subsided sufficiently to tolerate nourishment.

In many cases of this form of dyspepsia, the patient feels a terrible faintness as soon as the stomach is empty, which is in some degree relieved by taking proper food. This often leads the patient to resort to frequent eating when there is no requirement for so doing, and with great detriment. The difficulty referred to occurs particularly before breakfast; and the unpleasant sensations sometimes become so great that the appetite is destroyed. While the faintness described is not real

hunger, it is best to relieve it sometimes by the taking of some simple food, or a little warm drink. When troublesome at night, the patient may take a few sips of warm milk; or if inconvenience is experienced from this, a little very weak hot lemonade may be taken. It should be made by pouring boiling water on a slice of lemon or a little lemon peel. Add very little sugar, better none at all. Drink after allowing it to stand a few minutes. A few sips of cold water will often relieve the difficulty. In many cases a cup of warm drink may be taken an hour before breakfast with great advantage.

Further treatment consists in the employment of hot fomentations over the stomach two or three times a day, and if necessary after each meal. Hot and cold applications to the spine, just opposite the stomach, are also a valuable means of relief. All measures calculated to improve the general health should be thoroughly employe

NERVOUS DYSPEPSIA.

SYMPTOMS.—Frontal headache; pain described as pressure in the back part of the head; peculiar sensations at the top of the head; pain in the eye-balls; sometimes pain in the upper part of neck, or extending down the spine between the shoulders; pain in spine, back of stomach, or beneath shoulder-blades; neuralgia; palpitation of heart; cold extremities; general debility; confusion of thought; loss of memory; irritability; great nervousness; fidgets; morbid sensibility; melancholy; tendency to insanity; stomach cough; vertigo; blurring of vision; appearance of dark or bright spots, especially upon stooping; unnatural drowsiness, especially after meals; sleeplessness at night; languor in morning, feeling best in afternoon or evening.

The mutual sympathy between the stomach and the brain is very marked. Disease of the stomach may be produced by mental disorders, and various mental and nervous affections may arise from disease of the stomach. Cases sometimes occur in which the most prominent symptoms of dyspepsia manifest themselves through the nervous system, by which alone the disease may be made out. Such cases are included under this head. The stomach symptoms of indigestion are sometimes so very slight that they can hardly be distinguished; yet there is undoubtedly a serious fault in these cases in the elaboration of the food. The process of digestion is left incomplete, and the blood becomes full of crude, unelaborated material, which not only does not impart to the tissues new life and vigor, but is a direct source of irritation. The brain, being the most sensitive part of the nervous system, of course suffers most, and hence we have abundant cause for the mental depression, unbalanced mental action, confusion of ideas, vacil-

lation of judgment, perversity of disposition, and other kindred disturbances from which the nervous dyspeptic suffers.

Many persons, finding themselves in this wretched state, and not realizing the influence of physical conditions upon the mind, fall into hopeless despair, even when no outbreaking sin or intentionally wrong act has been committed. At first, there will be observed simply an exaggeration of real difficulties or misfortunes; but after a time the individual settles into a state of gloom, despondency, and mental depression in which he will suffer with troubles that are purely imaginary. Of these hypochondriacal persons, Dr. Cullen gave a very graphic description which we quote as follows:—

"In certain persons there is a state of mind distinguished by the following circumstances: a languor, a listlessness or want of resolution with reference to all undertakings; a disposition to seriousness, sadness, and timidity as to all future events; an apprehension of the worst or most unhappy state of them; and therefore, often upon slight grounds, an apprehension of great evil. Such persons are particularly attentive to the state of their own health, to every smallest change of feeling in their bodies; and from any unusual feeling, perhaps of the slightest kind, they apprehend great danger, and even death itself. In respect to all these feelings and apprehensions, there is commonly the most obstinate belief and persuasion."

Nervous dyspeptics often suffer much in mind from a morbid sensitiveness. They imagine themselves the subject of criticism or ridicule, become morose and irritable, and exceedingly unhappy. Occasionally they find themselves haunted with evil thoughts, with almost irresistible impulses to commit improper or criminal acts, as blasphemy, suicide, etc. They are almost always certain to imagine themselves the subjects of many different diseases, usually of some incurable malady.

It is observed that mental disorders of the character described are often the result of intestinal dyspepsia, a form of the disease in which the local symptoms are less prominent than are those which relate to the stomach, but equally grave.

Causes.—The causes of this form of dyspepsia are somewhat less obvious than those of the other varieties mentioned; but a causative relation has been traced in a sufficient number of cases to enable us to say that the disease is undoubtedly induced by sedentary habits, excessive brain labor with too little sleep, by unhappy social surround-

ings, by disappointment, by misfortune, by grief or anxiety, as well as by numerous dietetic errors, particularly the use of stimulating food, excessive quantities of animal food, tea, coffee, wine or other forms of alcoholic drinks, tobacco and other narcotics.

Treatment.—Nervous dyspeptics rarely complain of much difficulty with digestion, yet the most careful observance of strict dietetic rules is of great importance in this class of cases. The diet must be plain, unstimulating, but very nutritious. It is of special importance that the patient make a free use of the whole-grain preparations. Oatmeal is a specially good article of food, as are also graham and cracked wheat. Pepper, spice, mustard, and all other irritating condiments must be scrupulously avoided. There is usually a slow digestion in these cases, and hence the suggestions made respecting the diet in that form of stomach disease also apply to this.

Fomentations and the various other local applications for the relief of pain must be employed as necessary. In many cases fomentations over the stomach will be found very useful, though in some cases the nervousness will be aggravated by this application. Wearing the abdominal bandage is a very excellent means of increasing the activity of the stomach, and also of promoting sleep. Patients of this class usually need a great amount of rest, and judgment must be used in advising exercise. A change of occupation is essential in many cases, even after a cure has been effected, in order to prevent a relapse. We are certain, however, that a change of this kind is often advised when a change of diet is all that is required. We have not infrequently been consulted by literary persons who feared that their minds were becoming so seriously affected that they should be obliged to abandon their professions; but with few exceptions we have been able to say to them that a careful regulation of the diet and regimen was all that was required, and have been gratified to see the result all that could be desired.

MIXED CASES.

It not infrequently happens that cases of dyspepsia exhibit the symptoms which belong to two or more classes of the disease. In cases of this sort it is of course necessary to conform to the special indications so far as can be done. The most frequent combination is acid and painful dyspepsia. These cases are often very troublesome to manage. None but a careful discerning physician is competent to successfully pilot safely out of his doubly perplexing difficulties such a sufferer as this; but sufficient

care, patience, perseverance, and well-directed effort will secure certain success.

An Important Caution.—It is of great importance to recollect that the special directions for the diet in different forms of dyspepsia which we have given are not intended as rules to be followed for any great period of time. In many cases it is necessary to adhere strictly to the special dietary only for a few days, when the diet may by degrees be made to include a larger variety of foods. We would, however, impress upon the mind of the dyspeptic this fact; that when he finds himself well again, he must not make the error to suppose that the principle "once in grace always in grace" in any sense or in the smallest degree applies to the improved state of his digestion. Although the stomach may be restored to a sufficient degree of health and vigor to enable it to do its duty well *under favorable circumstances*, it will be certain to fail and relapse into a diseased state again as soon as those conditions are no longer supplied.

DEPRAVED APPETITE.

SYMPTOMS.—Unnatural craving for either wholesome or unwholesome foods and drinks; general decline in health, conditions varying according to the particular phase of the disease.

Polyphagia, or voracious eating, is a symptom which not infrequently accompanies diseases of the digestive organs. It is also frequently observed in various nervous diseases, as epilepsy and various mental disorders. In the form of gluttony it is merely a bad habit which is increased by cultivation. Persons affected by this disorder, for it must be considered a diseased condition, sometimes eat almost incredible quantities of food, raw meat, tallow candles, and in fact almost everything susceptible of mastication, being greedily devoured as long as the passage to the stomach will admit. In the majority of cases, voracious eating soon gives rise to serious indigestion, which protects the patient from the injuries which occur when excessive quantities of food are digested and absorbed into the system, such as fatty degeneration of the blood-vessels and various organic changes. The proper treatment for this condition is a rigid restriction of the dietary, the patient being placed, if necessary, upon a regular allowance, and carefully watched to prevent his taking too large a quantity. Not infrequently this morbid tendency constitutes one of the most serious obstacles to recovery, particularly if the pa-

tient is suffering with some other serious disease. We have frequently had patients who were evidently very desirous of recovering health, yet who appeared to be totally unable to control their appetites. If allowed to sit at the table with others they would commit gross breaches of propriety in appropriating to themselves the whole of some favorite article of food without regard to the wants of others, eating with a rapidity and voracity more consistent with the character of a hungry beast than of a human being. In these cases the morbid tendency rarely disappears without a removal of the disease of which it is a symptom.

Malacia and Pica are terms applied to a perversion of appetite consisting in a morbid craving after particular substances; the first, for substances of a nutritious character; the second, for substances which are wholly innutritious. Patients of the first class are frequently seen in what are commonly known as the "longings" of pregnancy, and frequently similar peculiarities are observed in cases of hysteria. Examples of pica are seen in the "dirt eaters" among the negroes of the Southern States, and the clay-eating tribes which inhabit the valley of the Amazon.

The treatment for malacia and pica must vary according to the individual case. When occasioned by pregnancy, the morbid condition will not disappear until the removal of the special cause. The form of the disease often seen in young ladies who manifest a great fondness for such unwholesome and innutritious substances as clay, chalk, slate, charcoal, etc., can be treated successfully only by ascertaining the morbid condition upon which the disease is really dependent.

Polydipsia is a disease characterized by a craving for particular liquids. If water is the liquid craved, it will frequently be drank in quantities of several gallons in twenty-four hours. A patient who came under our care not long since asserted that he habitually took one gallon of water before breakfast. When such great quantities of fluid are taken, the urine is very clear, appearing almost like water, and the quantities passed are very great, which may lead to the suspicion that the patient is suffering with diabetes. A chemical examination, however, shows that this is not correct, by demonstrating the absence of sugar. The cause of this peculiar difficulty is not understood, and nothing can be done except to improve the general health and restrict the amount of water taken as much as possible. Fortunately,

the large amount of water taken does not seem to interfere in very great degree with the general health. This morbid condition accompanies both forms of diabetes.

Inebriety is a condition in which there is an insatiable desire for alcoholic drinks. It is generally produced by long-continued habitual use of spirituous liquors, a diseased condition finally being established which renders the will almost powerless to control the appetite.

INTESTINAL PARASITES.

According to Heller, of the fifty parasites which infest man, twenty-one are found in the intestinal canal. The principal of these are of two kinds, known as tape-worms and round-worms. Three varieties of the former, and five of the latter, together constitute the principal parasites which inhabit the alimentary canal in man The names of these several varieties are, of tape-worms, *tænia solium*, *tænia saginata* or *mediocanellata* and *bothriocephalus latus*; of round-worms, *ascaris lumbricoides*, *oxyuris vermicularis* or thread worm, *tricocephalus dispar* or whip worm, *anchylostomum duodenale*, and *trichina spiralis*.

The occurrence of parasites in the intestinal canal is much more frequent than is generally supposed, as they often remain for many years undiscovered. It not infrequently happens, on the other hand, that people imagine themselves to be inhabited by worms of various sorts when they are wholly free from parasites of any kind. Less frequently persons become possessed with the idea that they have within their stomachs frogs, lizards, or other reptiles or small animals, a notion which is wholly without foundation, as it would be impossible for one of these creatures to live a day in the stomach or intestines.

TAPE-WORM.

SYMPTOMS.—Colic pains in lower part of the abdomen, especially after fasting, relieved by a full meal; ravenous hunger; distension of the bowels with gas; alternate constipation and diarrhea; sensation of something moving in the bowels; itching about the anus; tickling of the nose; vomiting; headache; night sweats; palpitation; heartburn; cramps; in children, convulsions; numbness; deafness; blindness; the passage of portions of the worm.

Of the various symptoms mentioned above, the last is the only positive sign of the presence of tape-worm. All the others are never

present in any one case; and very often no symptoms whatever occur except the passage of portions of the worm and of its eggs (see Figs. 276 to 278) There are no means of distinguishing by general symptoms the different varieties of tape-worm which inhabit the

Fig. 276.
Egg of Tænia Saginata.

Fig. 277.
Egg of Tænia Bothriocephalus Latus.

Fig. 278.
Egg of Tænia Solium.

human body; the variety can be determined only by examination of the portions of the worm which are expelled, or their eggs, with a microscope. This is not, however, a point of great practical importance, as the same remedy is efficient for all varieties. In some cases, various other symptoms are developed, particularly those which are due to the development of hydatids in the liver, the brain, the muscles, and other organs. This may occur in consequence of self-infection with the embryos of the worm through the introduction of its eggs into the stomach by means of violent retching or vomiting.

Cause.—The only cause of this disease is the reception into the system of the embryo of the tape-worm. These embryos are only to be found in the flesh of other animals. The principal sources of human infection are beef and pork. The embryos are found in the muscular tissue, or lean meat, inclosed in little cysts, as shown in Fig. 155 on page 395. In Figs. 279 and 280 the embryo of the tape-worm, known as cysticercus, is shown of natural size and slightly magnified. PLATE IX shows the head of an embryo such as is found in the flesh of the hog, greatly magnified. When flesh containing the embryos is eaten, the cyst is digested off by the gastric juice, and the embryo attaches itself to the mucous membrane of the small intestine, by means of its hooks and suckers. In a short time a small body is formed, which is quickly duplicated, and the process continues until from an insignificant beginning the for-

Fig. 279.
Small Embryo.

Fig. 280.
Large Embryo.

midable length of fifteen, twenty, and even forty or fifty, or more, feet is formed. Thus the worm, when fully developed, is really a chain of living creatures, each link being a separate individual, producing eggs in vast numbers, which pass out of the body in the discharges, and, finding entrance into the stomach of some other animal, develop into embryos, to be again eaten by man, or some other animal, in whom the fully developed worm will be produced.

Treatment.—No patient should ever be treated for tape worm without the positive signs of the presence of the worm are first detected. It generally happens that segments of the worm are broken

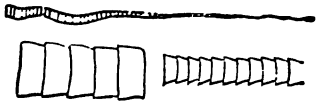


Fig. 281.
Segments of Tænia Solium, of natural size.

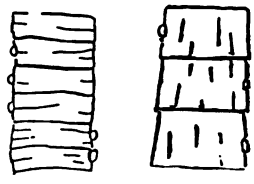


Fig. 282.
Sections of Tænia Saginata.

off and expelled at intervals; but when this does not occur spontaneously, portions may be obtained by giving the patient a mild laxative, as a small dose of castor-oil. The discharges from the bowels should be carefully examined for several days, if segments such as are shown in Figs. 281 and 282 are not discovered sooner. Persons who are well skilled in the use of the microscope may examine the discharges for eggs of the worm, which are always present in great numbers when the worm is present. We must not omit to add here the caution that portions of undigested food, masses of mucus, etc., often resemble worms or portions of worms when cursorily examined. The inspection should be sufficiently careful to avoid such an error as this. Many persons are unnecessarily frightened by appearances of this sort. Although many persons have suffered almost untold miseries under the hands of quacks without having a cure effected, it may be considered as positively demonstrated that the worm can in every case be expelled, provided that proper treatment is applied.

Preparatory Treatment.—This occupies two days. Give the patient only such food as will not produce much residue, as white bread, meat, beef tea, and milk. Graham bread, oatmeal, cracked wheat, vegetables of all kinds, fruits,—especially seedy fruits, and eggs,

should be wholly avoided. The patient should drink several glasses of cold water within an hour before each meal, and should apply fomentations and percussions to the abdomen for the purpose of causing the bowels to become as loose as possible. Large hot enemas should also be used twice a day. (See p. 663 for directions for giving large enema.) The second day, the patient may eat freely of onions for the purpose of sickening the worm. Some recommend salt herring for the same purpose, to be eaten with onions.

Curative Treatment.—The third morning after beginning treatment let the patient take for breakfast a little milk or bran coffee and dry white bread toast. Some recommend that the patient shall fast; but it is better to allow a small quantity of food, as the tendency to vomit is less. The most effective medicine is koosso. This kills the worm; and after it has acted, the dead worm must be expelled by means of a dose of castor-oil. The quantity of koosso necessary to kill the worm is five to seven drams for an adult. It should be given in small capsules, or may be taken in decoction, the whole being drunk. For children, the dose should be proportionately smaller. Two hours after the koosso has been taken, administer two tablespoonfuls of castor-oil. Male fern, pomegranate root, kameela, and turpentine are also used for the cure of tape-worm, and with success. The seeds of the common pumpkin have also been successfully used for the same purpose. Bruise two ounces of pumpkin seeds in a mortar with a little water. Add enough water to make up to a half pint. Strain through a coarse cloth. This is for one dose. Repeat daily for several days in succession. This remedy has the advantage of being perfectly harmless, if it does not destroy the worm.

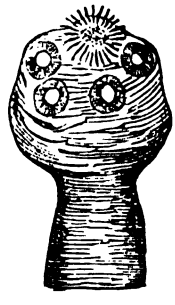


Fig. 283.
Head of Tape-worm.

It should be remarked that many people imagine themselves to be the possessors of tape-worms when they are wholly free from anything of the sort. It not infrequently happens, also, that the general symptoms of the disease continue for a time after the worm is expelled. In order to assure patients with confidence that a cure has been effected, it is necessary to examine the discharges from the bowels with great care so as to find the head of the worm, which may be distinguished by its form, as seen in Fig. 283. On account of its small size it should be sought with great care. If the head is not expelled, the worm will be likely to grow again.

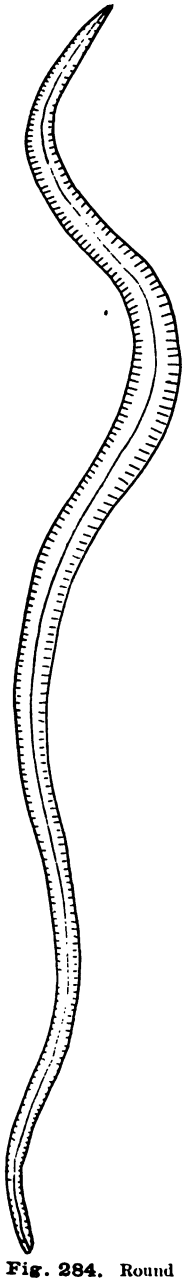


Fig. 284. Round Worm, natural size.

Prevention.—The only sure means of prevention is the entire avoidance of the use of meat. It has been supposed that the principal source of infection is the use of raw pork; but the observations of Dr. Leidy of Philadelphia, and the eminent Prof. Cobbold of England, have shown very clearly that the most common source of infection is raw beef. Neither salting nor smoking will destroy the embryonic parasites. They will resist the action of both cold and heat in an extraordinary degree. They are only destroyed by a temperature exceeding 160° F., and require exposure for some little time. This necessitates that meat should be thoroughly cooked in order to secure immunity from infection with these loathsome parasites.

ROUND WORMS.—ASCARIS LUMBRICOIDES.

SYMPTOMS.—Itching of nose; colic pains; boring pains in abdomen; fickle appetite; distension of stomach; diarrhea, with passage of mucus tinged with blood; dark eyelids; face swollen; foul breath; unequal dilatation of pupils; unpleasant dreams; starting during sleep as if frightened; grinding of teeth; pains in limbs; irregular pulse; general wasting; also many of the symptoms described as indicating tape-worm; only positive sign, expulsion of worms.

Other symptoms not mentioned above are sometimes produced by the migratory tendencies of the worm. It seems to have a special fondness for getting into narrow places. The worms have been found in the œsophagus, the nose, the Eustachian tube, the nasal duct, the air-passages, the pancreatic and gall ducts, and even in the bladder and uterus, as well as in the stomach and intestines, where they are chiefly found. They do not usually remain long in the stomach, the irritation produced by their presence inducing vomiting. The disposition round worms have for squeezing themselves through very small openings has been taken advantage of by an ingenious physician in the construction of a "worm-trap." This worm is represented of natural size in Fig. 284.

Cause.—The only cause for round-worms is the reception of their eggs into the system. It is supposed that they are introduced into the stomach by the use of celery, salads, raw vegetables, and perhaps fruits. They may also be introduced by drinking water which has been contaminated with the soakings from privies, etc. The eggs will retain their vitality for many years, and are not destroyed by freezing or drying. The embryo, also, when partially developed, shows almost equal tenacity of life. The worm inhabits the small intestine. It is cylindrical in form, of a dirty reddish yellow or light brownish color, and seven to ten inches in length, the females being a little longer than the males. This parasite is very common in some countries, quite a large proportion of the inhabitants being affected.

Treatment.—The best remedy is *santonin*. Give in doses of one-third of a grain to infants, and one-half grain to a grain and a half to adults, to be given in capsules or in a syrup four times in one day. The last dose should be followed by a laxative dose of castor-oil.

Another very useful remedy which we have often used with success is the following: Fl. Ex. of *senna* and Fl. Ex. of *spigelia*, equal parts. Dose: one to four teaspoonfuls three times a day, according to the age of the patient. Continue this treatment for two or three days. If no worms appear in the bowel discharges, there are probably none present.

THREAD-WORM.—OXYURIS VERMICULARIS.

SYMPTOMS.—Severe itching and tickling just within the anus, especially at night; unnatural sexual excitement; in males, frequent erections, and even seminal emissions; presence of the worms in the bowel passages.

Many other symptoms have been attributed to the presence of this worm, but the above are the most important. Contrary to the generally received opinion, the worm does not inhabit chiefly the rectum, but the large intestine, and especially the cæcum. Its natural size may be seen by reference to Fig. 285. In Fig. 286 is seen the worm greatly magnified and in the act of shedding its skin. The symptoms in the rectum are produced by the motions of the worms in this part, as they go down into the rectum to deposit their eggs. Sometimes they crawl out upon the skin about the anus, but in such cases soon die, as they cannot return.

Fig. 285. Thread Worm of natural size.

Cause.—The thread-worm is undoubtedly produced from eggs, which each worm produces in prodigious numbers. How they get into the stomach is not well known, but it is undoubtedly through neglect of proper cleanliness.

Fig. 286. Thread-Worm shedding its skin. Greatly magnified.

Treatment.—All the text-books prescribe treatment for the rectum; but this mode of treating the disease has been notoriously unsuccessful. The treatment, in order to be of any real value, must reach the large intestine and especially the cæcum. According to Heller, the best remedy is a copious enema of water, or of a solution of castile soap in proportion of a dram of soap to a quart of water. From two to four quarts of water should be injected into the bowels at once. For method of giving large enema, see page 663. A handful of quassia chips may be boiled in the water instead of using soap. The remedy usually requires repetition for a few times. We have found it successful when thoroughly applied.

WHIP-WORM.—TRICOCEPHALUS DISPAR.

SYMPTOMS.—Only reliable symptom, expulsion of worm or eggs.

Fig. 287. Whip Worm. Slightly magnifi'd

Not a very common parasite. The form of the worm is shown in Fig. 287.

Treatment.—Same as for the preceding.

STRONGYLUS DUODENALIS.

SYMPTOMS.—Anæmia; pallor; exhaustion; dyspepsia; disturbances of the circulation; fickle appetite; morbid appetite for mortar, wood, coal, etc.; pain and heaviness in the stomach; shortness of breath; quick pulse; giddiness; ringing in ears; black spots before the eyes; dropsy; diarrhea and vomiting.

This worm occurs only in warm countries, and in this country is confined to the Southern States. The worm lives on the blood sucked from the blood-vessels of the mucous membrane to which it attaches itself. It is this that leads to the great anæmia and prostration met in this disease.

Cause.—The cause is the same as that of other parasitic diseases of the intestinal canal; viz., the reception into the stomach, in food or drink, of the eggs or embryos of the parasite.

Treatment.—In bad cases recovery is very doubtful. The remedies best to employ are those already recommended for other worms. Oil of turpentine is stated to be very efficacious. It should be given in milk in two tablespoonful doses, quite a quantity of milk being taken afterward. As it is probable that the eggs of this worm are introduced into the body in drinking water, it is important that the greatest care should be taken to secure pure water. In case there is any possibility of danger from this source, water should be carefully filtered or boiled. It is stated upon good authority that intestinal parasites are very rare in Paris, which is attributed to the fact that in that city nearly all the water drank is filtered.

FLUKES.

The fluke is a parasitic worm which inhabits the duodenum and biliary passages in man. It is very common in sheep, occasioning what is known as "liver-rot," a disease from which many thousands of sheep often die in a single epidemic. In Egypt a variety of the parasite is found which gives rise to a very formidable disease. In this country, fortunately, the parasite is so seldom met with in man that it is of no medical importance.

DISEASES OF THE LIVER.

In ancient times derangements of the liver were supposed to be a fundamental condition in nearly all diseases. In the humoral theory of disease, great stress was laid upon the condition of the bile, yellow bile being supposed to produce inflammation, while black bile induced opposite conditions together with hypochondria and insanity. In modern times, the tendency has been to the opposite extreme. When it became thoroughly established that the liver was not the seat of the mind, as was once supposed, and especially when Harvey made the discovery that the heart instead of the liver was the center of the circulation, medical men began to look upon the liver as of far less importance than it had for ages been supposed to be. Even among the common people the liver has come to be regarded as merely an organ for making bile, and it is rare that any diseased condition, besides

structural derangements, is attributed to it except such as depend upon some disturbance of secretion. The most recent investigations have shown that the ancient theory was more nearly correct than the modern one, and that while the liver is neither the seat of the mind nor the center of circulation of the blood, it performs at least two other important functions besides that of secreting the bile; namely, elaboration of certain elements of the food, by which process they are fitted to form blood; and the destruction, for the purpose of removal from the system, of worn-out particles which become sources of disease, if retained. The last-named function is independent of the secretion proper, which is both a secretory and an excretory product, being useful in the process of digestion, and at the same time containing poisonous elements which must be eliminated from the system. Thus it will be seen that the function of the liver is an extremely complicated one, and hence it is in the highest degree reasonable to suppose that its functions should be easily deranged and that such derangement should produce a great variety of symptoms. Diseases of the liver, like those of most of the other organs of the body, are chiefly of two classes: functional and structural; that is, those which are chiefly dependent on disturbed action, and those in which the morbid condition of the tissues of the organ is the most prominent condition.

Functional Diseases of the Liver.—In the light of modern investigations in pathology, and physiology, there is little reason to doubt but that disordered action of the liver is a morbid condition to which may be attributed a great variety of symptoms which have often been attributed to other organs. The ordinary classification of functional disorders of the liver is as follows: first, diminished secretion; second, increased secretion; third, secretion of morbid bile. As this classification is not in accordance with the most modern views of physiology it must be discarded. In treating this subject we shall follow very closely the classification of Murchison, one of the most recent, and by far the most able writer on diseases of the liver.

TORPID LIVER.

SYMPTOMS.—Bowels irregular, generally costive; discharges yellow, whitish, or drab; disagreeable taste in the mouth, usually in the morning; furred tongue, yellowish or white; loss of appetite; sallow or dingy skin; patches on the skin known as "liver spots;" white of the eye yellow or dingy; flatulence; headache in the front part of the head; dullness and heaviness most of the time; lassitude and drowsiness after meals; great depression of spirits; sediment in the urine when cold; vertigo; noises in the ears; disturbed sleep.

Causes.—Errors in diet may justly be said to be the most frequent of all the numerous causes of torpidity of the liver. Fashionable dinners, late suppers, overeating, especially the excessive use of fats, sugar, pastry, condiments, alcoholic drinks, and tea and coffee, may be charged with being the most common causes of inactivity of this organ. The free use of mustard, ginger, pepper, curry powder, and other irritating condiments in many tropical countries, leads to the almost universal prevalence of this disease. In addition, sedentary habits, the use of tobacco and other narcotics, restriction of the liver by wearing tight clothing, and malaria should also be mentioned as important causes of this very common affection. We should also remark that the prolonged use of laxative medicines, "after-dinner pills," and the various drugs that are recommended for constipation, are most prolific sources of torpid liver. The same may be said of mercury, although this drug is less frequently used than formerly, and is seldom employed to such an extent as twenty years ago. The liver possesses the curious property of being able to retain in its structure metallic poisons which may be brought to it in the circulation, so that the effect of injuries received from a mercurial course is apt to be more or less permanent.

Treatment.—In severe chronic cases of this affection the patient must studiously avoid the use of fats, sugar, condiments, and alcoholic drinks. Regulation of the diet is a positive necessity in the radical treatment of this disease. Tobacco, if used, must also be discontinued. If the patient's habits are sedentary, he must begin a course of regular, systematic exercise, and should in every way possible, build up his general health. Food should be taken in moderate quantities, and should consist chiefly of grains and acid fruits. Some patients are obliged to avoid the use of milk ; with others it does not seem to disagree. In addition to these general measures, the patient, if not emaciated, may take with advantage for two or three weeks two or three vapor baths or packs a week. The wet girdle or *umschlag* should be worn night and day. The use of the hot and cold douche over the liver is very efficient. Central galvanization may also be applied with advantage. The use of mercury with various laxatives, purgatives, and the hosts of liver medicines which are recommended for this very common affection, will do more harm than good. The best that any of these drugs could do would be to whip up the flagging energies of the already overworked organ without in any way lightening its burdens or giving it increased

strength to perform the labor required of it. The repeated use of remedies of this kind greatly aggravates the trouble, increasing the inactivity of the organ. Careful experiments scientifically conducted have also shown that mercury and various other remedies which have been most relied on to stimulate the organ to activity, either decrease the amount of bile secreted or have no effect upon it whatever. The apparent evidences of benefit derived from their use are entirely due to the fact that they poison the bile which is poured out into the intestines, thus rendering it unfit for absorption, so that an unusual amount is discharged from the bowels, although the amount secreted is not increased, but, as has been shown to be the case with mercury, is actually decreased. The liver pads which have attained such an enormous sale within the last few years are utterly devoid of merit on the ground claimed, namely; that they extract the disease from the system by absorption. It is possible that they do some little good by retaining the heat and moisture of the skin, and thus acting as a poultice; but for this purpose they are far inferior to the wet bandage.

CONGESTION OF THE LIVER.

SYMPTOMS.—Gas in the stomach and bowels; weight and fullness in the stomach and in the region of the liver; heart-burn and eructation of acid matter; furred tongue; clammy, bitter taste in the mouth in the morning; nasal and pharyngeal catarrh; bowels irregular; color of stools changeable; palpitation of the heart; beating at the stomach; irregular pulse; disturbed sleep; bad dreams; disturbance of vision; vertigo; pain in front part of head; hemorrhoids; dry cough; urine highly colored with brick-dust sediment.

All of the above symptoms are not always found in any one patient, but the majority of them will be observed in all patients suffering from acute or chronic congestion of the liver. This affection is much more common than is generally supposed, and it lays the foundation for a great variety of secondary difficulties. On account of the congested state of the liver, it fails to perform its work of breaking down the waste tissues and effecting their elimination by the kidneys; consequently, the whole system is contaminated by the products of imperfect elaboration, the chief of which are uric and oxalic acids. Gout is well known to be due to the accumulation of uric acid in the system, and doubtless depends more on the inactive state of the liver due to congestion than to any other cause. Stone in the bladder, gall-stones, degeneration of the kidneys, general degeneration of the tissues of the body, local inflammations of various kinds, and numerous constitutional diseases, are un-

doubtedly due to disordered action of the liver, probably chronic congestion.

There are good reasons for believing that many constitutional diseases which are not otherwise easily accounted for, are really due to disordered liver. Among other disorders which may fairly be attributable to functional derangements of this organ, may be mentioned dyspepsia, hemorrhoids, jaundice, nervous debility, pains in the limbs, burning or scorching patches in the palms or soles, neuralgia, headache, cramp, vertigo, disturbances of vision, paralysis, mania, epilepsy, sleeplessness, depression of spirits, and nervous irritability. Various derangements of other organs due to functional disturbance of the liver, may be chiefly attributed to congestion, such as palpitation of the heart, neuralgia of the heart, feeble circulation, chronic catarrh of the throat, asthma, chronic bronchitis, chronic inflammation of the bladder, together with various diseases of the skin, as psoriasis, eczema, urticaria, pruritis or intolerable itching, boils, and brown spots in the face and hands known as liver spots.

Causes.—The causes of congestion of the liver, like those of most other functional diseases of the organ, include chronic catarrh of the stomach and intestines, and organic disease of the heart and lungs, by which mechanical congestion is produced. Among other causes, errors in diet must be mentioned as the most important. Overeating is one of the most frequent causes of this affection. A careful examination will show that the liver becomes enlarged after a hearty meal, owing to the increased quantity of blood sent into it during digestion. The use of fats, sugars, and alcoholic drinks may rightly be regarded as among the most serious dietetic errors productive of this disease, as it may easily be shown that the size of the liver is very greatly increased after a meal in which these injurious substances have been used. It has been shown also that the deficient supply of pure air, high temperature, prolonged mental anxiety, malaria, and various other conditions are productive of congestion of the liver.

Treatment.—Dr. Murchison wisely remarks with reference to the treatment of this disease, that "much more permanent benefit is to be derived from careful regulation of the ingesta [food] than from physic." Dr. Bence Jones, an eminent English physician, who is good authority on the subject, insists that "a minimum of albuminous [meat and eggs] food should be taken in order to produce less uric acid." Sugar, butter, tea and coffee, condiments of all kinds and alcoholic drinks, should be scrupulously avoided. The food should be as simple as possible, and the

patient should be exceedingly careful to avoid overeating. The use of acid fruits is to be recommended. Much benefit may be derived from the use of water. It should be drank in considerable quantities for the purpose of thoroughly cleansing the tissues from the products of the breaking down of the system. The skin should be kept clean by daily baths. The vapor and Turkish baths, packs, rubbing wet sheet, and abdominal girdle, are excellent measures of treatment. In addition, the same measures should be employed as recommended for torpidity of the liver, a condition in many respects closely resembling congestion. Iron, quinine, and the various other tonics which are frequently prescribed for persons suffering with congestion of the liver, always aggravate the difficulty. Illustrations of this fact are found in the work of Dr. Murchison already referred to; and we have often confirmed it by experience.

HEPATITIS.—INFLAMMATION OF THE LIVER.

SYMPTOMS. Tenderness on the right side near the lower border of the ribs; high fever similar to that of typhoid fever; enlargement of the liver, producing sensation of fullness on right side; pain, increased by pressing up under the ribs, also by cough or a deep breath; patient cannot lie on the left side; short breath; cough; vomiting; hiccough; white of the eye yellow; pain near the right collar-bone and about the shoulder; occasionally, formation of abscesses which occasion great increase of pain and tenderness, with diarrhea and dysentery.

Causes.—The causes of inflammation of the liver are similar to those which produce congestion.

Treatment.—One of the very best means which can be employed after regulating the patient's diet, giving him only the most simple food, is the application of hot fomentations over the liver. The fomentations should be applied several times a day for ten to twenty minutes each time. They will relieve pain, and have a tendency to subdue inflammation and restore the organ to a healthy condition. In the intervals between the applications, a large compress should be kept upon the bowels over the region of the liver. The diet should be restricted to a very small quantity of the simplest food. The patient may be allowed to drink lemonade or barley-water. If an abscess continues to develop until suppuration occurs, serious consequences may result from its discharge into the abdominal cavity. Abscess of the liver may be relieved by aspiration.

Chronic Inflammation of the Liver.—The disease known by this name is really chronic congestion. The causes, symptoms, and treatment are similar to those of congestion and torpidity of the liver.

INFLAMMATION OF THE BILE-DUCTS.

SYMPTOMS.—Tenderness at the pit of the stomach and at the lower border of the ribs on the right side; tightness in the same region; nausea; slight fever; constipation of the bowels; jaundice; together with the various symptoms of congestion of the liver.

This disease is generally caused by errors in diet, and is almost always preceded by symptoms of indigestion, particularly by acute catarrh of the stomach, commonly known as a bilious attack. The treatment of this affection is precisely the same as that indicated in congestion and inflammation of the liver.

GALL-STONES.

SYMPTOMS.—Dull pain about the liver, sometimes extending to the shoulder; chills and fever; nausea; in severe cases, attacks of vomiting accompanied by severe pains at the pit of the stomach usually coming on after some slight exertion or jarring of the body; jaundice; concretions found in the bowel discharges.

Gall-stones are concretions or hard masses, which are found after death in the gall-bladder, or pass off during life, and may be found in the discharges from the bowels. They usually consist of cholesterine, an abundant constituent of the bile, but contain more or less of other matters also. Cholesterine is a resinous substance, and when this element predominates, the concretions resemble resin and will burn when held in a flame.

Causes.—The origin of gall-stones is not well understood. It is probable that they are caused by portions of mucus which become lodged in the biliary passages, and become centers for the accumulation of cholesterine, the coloring-matter of the bile, and various calcareous matters. The causes of gall-stones are chiefly catarrh of the bile-ducts, errors in diet, particularly the excessive use of animal food, the habitual use of alcoholic drinks, and sedentary habits of life. It has been noticed that this disease occurs very frequently in persons kept in close confinement in jails. It has also been observed that cows frequently suffer from gall-stones when kept in stables during the winter. There are also reasons for believing that the use of hard water is a common cause of the affection. The disease is most apt to occur in advanced life, and is more common among females than males.

The diagnosis of gall-stones is not positive unless they are found in the discharges from the bowels. The only method for finding them is to carefully wash the discharges through a sieve with water. This

should be done for three or four days after the paroxysm occurs if no concretion is sooner found. We have a number of specimens of gall-stones, some of which are remarkably large. In one case, the gall-bladder was greatly distended and completely filled with a single bilary concretion.

Treatment.—To relieve the most urgent symptoms, give the patient a hot sitz, vapor, or full bath, also apply hot fomentations over the region of the stomach and liver. To relieve vomiting, small bits of ice may be swallowed. Copious drinks of hot water containing a little bicarbonate of soda will also give relief. If the suffering is very great, and not readily relieved by other means, an anodyne should be employed. To prevent an occurrence of the attack, all the causes of the disease should be avoided. The patient should take only the most simple foods. Fats should be avoided. For drink, only distilled or soft water should be used, which should be taken in abundance, six or eight glasses being drank each day. The usual measures of treatment recommended for torpid liver should also be employed. The popular notion that certain medicines possess the property of dissolving gall-stones is an error which has not the slightest foundation in fact, not being sustained by experience. Medicines taken into the stomach for this purpose would never reach the bile-duct in sufficient quantity to accomplish this, although they might be able to dissolve the concretions when applied to them outside the body. The only remedy of any value whatever is to render the bile unusually fluid by drinking large quantities of water, as has already been recommended. There is evidence to show that by this means gall-stones may be dissolved and the tendency to their formation checked.

JAUNDICE.

SYMPTOMS.—Yellowness of the eyes and skin; dark or saffron color of urine; clay colored bowel discharges; itching of the skin; drowsiness; giddiness; lassitude; mental depression; irritable temper; bad taste in the mouth; slow pulse; general symptoms of dyspepsia.

Causes.—The principal causes are the following: Obstruction of the bile-duct by gall-stones or tumors, or by swelling of the mucous membrane in consequence of catarrh of the duodenum or bile-duct, the effects upon the system of certain poisons, as malaria, and the poisons which occasion yellow fever, typhoid and typhus fevers, scarlatina, etc., together with animal poisons, snake bites, and such min-

eral poisons as mercury, silver, copper, and antimony. It also occurs as the result of fright, anxiety, or any other severe mental emotion; from an insufficient supply of fresh air, as is illustrated in persons of sedentary habits who confine themselves in close rooms, especially in the winter season; from constipation, which occasions the absorption of large quantities of bile from the contents of the bowels being too long retained.

Treatment.—Treatment consists in removing, so far as possible, the causes of the disease which have been enumerated. In addition to this, the patient must adopt the measures of treatment recommended for torpid and congested liver, which we need not here repeat. In case jaundice is due to partial obstruction from gall-stones, the latter affection must be treated in the manner already described.

ENLARGEMENT OF THE LIVER.

Enlargement of the liver occurs, most frequently, as the result of morbid changes. There is more or less enlargement in all cases of congestion and inflammation. Enlargements of this class, however, are of a temporary character, lasting but for a short time. The more serious cases of enlargement are more or less permanent. Enlargement of the liver is sometimes accompanied by pain, as when it is the result of congestion, inflammation, abscess, cancer, or catarrh of the bile-ducts. In some cases there is no pain, as in fatty and waxy liver, hydatids and hypertrophy of the organ. The symptoms which accompany the disease differ according to the cause of the enlargement and the particular form of the disease present. The abnormal size of the organ may be easily discovered by palpitation of the abdomen, as the patient lies on his back with his knees drawn up so as to relieve the abdominal walls. In health, the lower border of the liver reaches only to the lower edge of the ribs on the right side, but in disease it may be extended so as to fill up a considerable proportion of the abdomen. Fig. 288 represents the normal

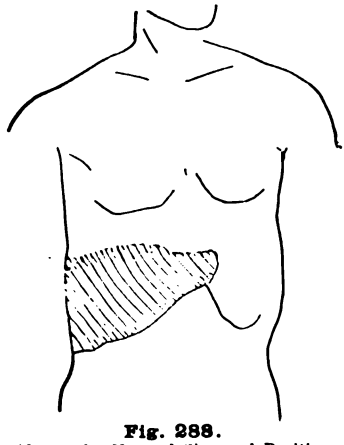


Fig. 288.
Shows the Natural Size and Position of Liver

size and position of the liver. Fig. 289 shows the size of the liver in a case which we have under treatment at the time of this writing. It will be observed that the organ is increased to several times its natural size.

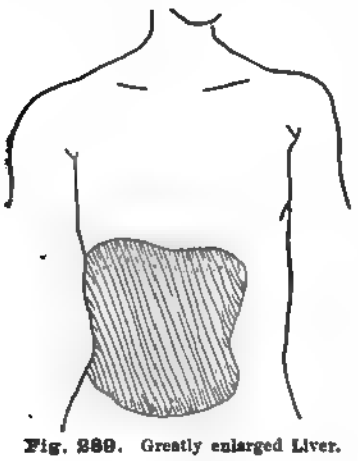


Fig. 289. Greatly enlarged Liver.

Waxy Liver.—In this form of enlargement of the liver, the tissue of the organ becomes filled with a peculiar substance, which gives to it a waxy appearance. The organ loses its natural chocolate hue and becomes very light colored. The disease most often occurs in persons who have long suffered from the daily loss of large quantities of pus, as from a chronic abscess. It is generally accompanied by a similar disease of the kidneys, which is indicated by the presence of albumen in the urine. It also occurs in consumption. For treatment, see "Waxy Degeneration of the Kidneys."

Fatty Degeneration.—In this affection, the tissues of the liver become infiltrated with fat. The disease gives very few symptoms. Its existence may be surmised, however, from the existence of fatty degeneration in other organs. It is generally accompanied by fatty degeneration of the heart, indicated by a weak pulse and febrile difficulties. The disease is produced by overeating, and by all other causes which conduce to the formation of fat and interfere with the general health. The habitual use of alcoholic drinks will produce fatty degeneration of the liver and other organs, on account of the increased amount of fat in the blood. It is often found in such wasting diseases as consumption, chronic dyspepsia, cancer, etc. In thirteen persons who died of delirium tremens, Frerichs found seven who were affected with this disease. The influence of sedentary habits in producing fatty degeneration is shown by the fact that it is almost universal in the domestic cat. The fact is also well known to pathologists that the liver of a cat is generally selected for the purpose of demonstrating the microscopical changes which take place in this disease, when a specimen of human liver subject to this disease can not be readily obtained.

Treatment.—The patient should avoid butter, fats, sugar, alcoholic drinks, tea and coffee, and in fact all articles of food conducive to the production of fat. An abundance of out-of-door exercise should be taken. Great attention should be given to the general health.

HYDATID TUMOR OF THE LIVER.

This is a disease in which cysts are formed in the liver, being developed from the echinococcus. The origin of these cysts is very curious. Eggs from the tape-worm from the common dog find entrance to the stomach through the food or drink, being developed into minute embryos which find their way into the liver, there forming the cysts which are characteristic of this disease. The dropsical enlargement becomes so great as to cause inconvenience to the patient. Death sometimes occurs from rupture of the cyst and discharge of its contents into the abdominal cavity, chest, veins, or some other internal part. In Iceland the disease is so very common that it is said to be the cause of at least one-seventh of the whole number of deaths.

Treatment.—The only measure of treatment of any value is removal of the fluid by means of the aspirator. It has been found that if one-half or two-thirds of the fluid be removed, the disease will disappear in a majority of cases. Electricity has also been used with success in the treatment of cases of this kind.

CONTRACTION OF THE LIVER.

Diminution in the size of the liver is by no means so common an affection as enlargement of this organ. The most common cause is the use of alcoholic drinks, which occasion what is known as atrophy, or cirrhosis, of the liver. This form of liver is seen in Fig. 290. It is sometimes called "hob-nail" liver on account of the great abundance of small nodules seen upon the surface. The first symptoms of the disease are those of alcoholic poisoning, which are nausea, retching in the morning, accompanied by a sinking feeling, loss of appetite for solid food, bitter taste in the mouth, pain after eating, irregularity of the bowels, piles, turbid urine, and mental depression. After a time, the patient becomes sallow and emaciated, and reddish spots appear upon the face in consequence of

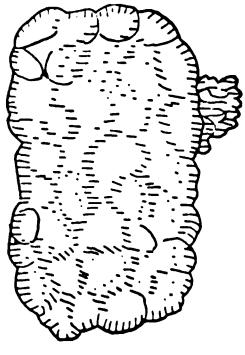


Fig. 290. Gin Liver.

the enlargement of the veins; also in most cases there is a dull pain low down upon the right side, and pain in the right shoulder. Sometimes the roughness of the surface of the liver may be felt through the abdominal walls. If the disease has existed some time, abdominal dropsy occurs from obstruction to the portal circulation; also enlargement of the external veins of the abdomen, due to the same cause Piles is an almost constant accompaniment of the disease, being produced in the same way. Disease of the kidneys is also quite likely to be present.

Treatment.—Total abstinence from all stimulants. The diet must be of the plainest and simplest character, all fats, sweets, spices, pastry, and all other foods difficult of digestion being carefully avoided. Abdominal dropsy should be treated as described elsewhere. The most that can be done in the majority of cases is to palliate the symptoms and improve the patient's general health in every possible manner.

DISPLACEMENT AND DISTORTION OF THE LIVER.

The morbid conditions of the liver considered under this head are wholly attributable to the abuse of the organ by tight lacing. Figs. 291, 292, 293, and 294, are representations of livers found in patients in post-mortem examinations, which illustrate the terrible effects of following the custom of constricting the waist. The custom is not wholly confined to the female sex as might be supposed. In Fig 291 the organ is so distorted as to be scarcely recognizable. The lower portion has been crowded down into a conical form, and the whole organ has evidently been so compressed as to render the proper performance of its functions impossible. In Fig. 292 the compression has been applied somewhat differently, and consequently a different effect has been produced, the organ having been nearly cut in two by the continuous pressure brought to bear upon it. Fig 293 represents a liver which has been divided into three parts or lobes, in the lower of which can be seen several enlarged veins, branches of the portal vein, which have become enormously distended by the long-continued pressure. Fig. 294 illustrates a case in which

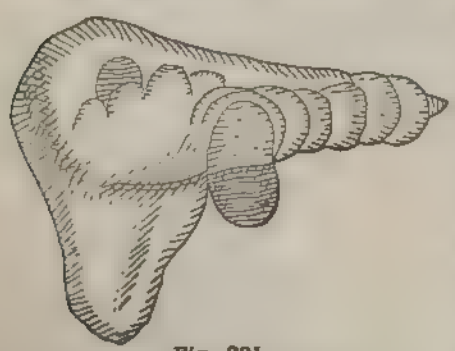


Fig. 291.
Liver Distorted by Tight Lacing.

the pressure applied about the waist was so great that the liver was compressed entirely out of its normal position, being crowded down

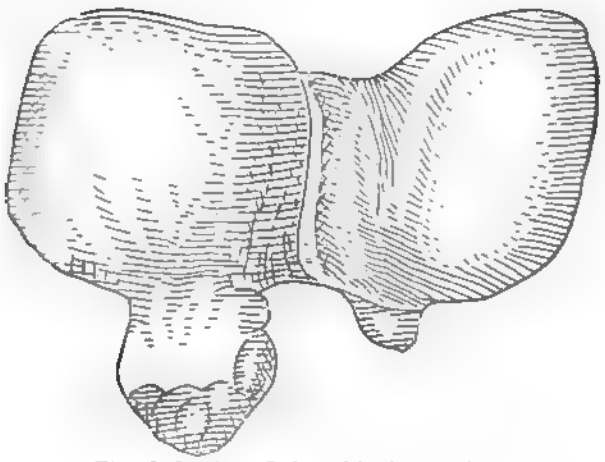


Fig. 292. Liver Deformed by Compression.

wholly below the ribs, until its rounded surface, which should be presented upward, is presented outward against the abdominal wall, giving the deceptive appearance of enormous enlargement.

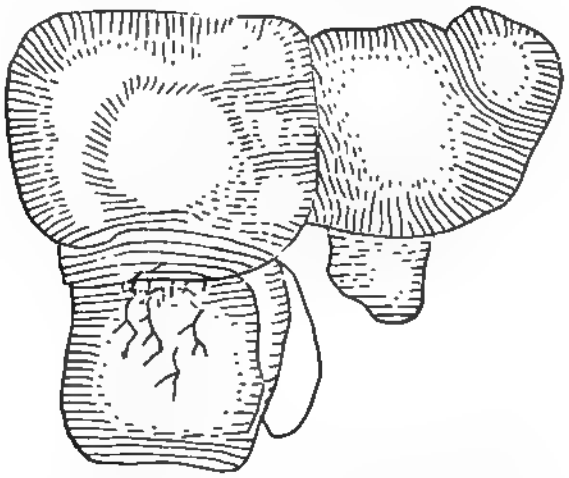


Fig. 293. Liver Showing Effects of Compression.

When pursuing a special course of study in this class of diseases in Bellevue Hospital several years ago, we encountered the case of a

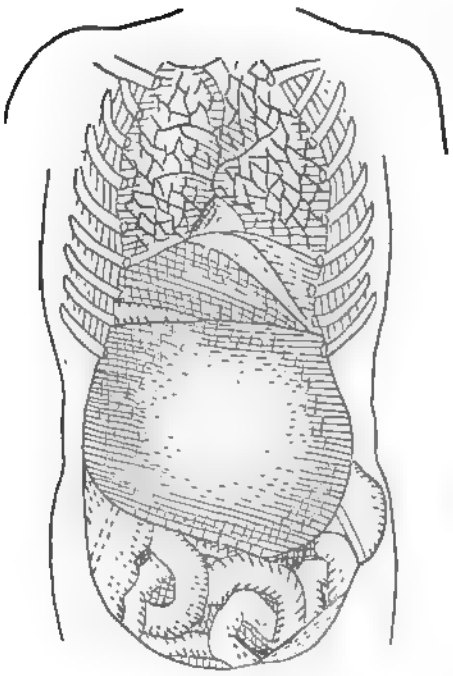


Fig. 294.

woman in whom the condition of the liver was as represented in Fig. 295. The constriction of the waist had been so great that the liver was almost literally divided in two. The case was in fact a typical one of "tight-lace fissure of the liver."

It is stated on good authority that displacements and distortions of the liver in consequence of tight lacing are exceedingly common. Indeed, it is impossible to believe that any liver could be subjected to the abnormal conditions necessitated by the modern fashionable dress without being compressed out of its natural shape and position. The only remedy, of course, for displacements and distortions is to discontinue the cause and to employ such means as will, so far as possible, restore the distorted parts to their normal condition. In the majority of cases this can be accomplished only to a slight degree, as the distortion becomes permanent after it has existed for a number of years.

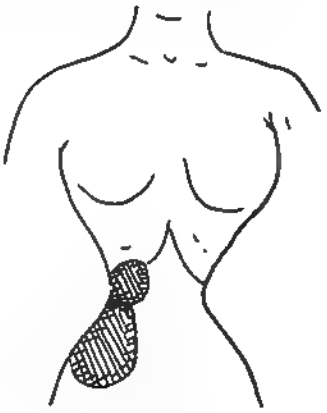


Fig. 295.

As before remarked, women are not the only transgressors in this direction. The habit of sustaining the pantaloons by buttoning them tightly about the waist, or holding them by means of a tightly buckled belt, is a very bad one, and may produce as much distortion of the liver as tight-lacing in ladies. Some years ago, the injury resulting from the general prevalence of the habit in the Russian army became so apparent that a royal edict was issued prohibiting it.

ENLARGEMENT OF THE SPLEEN.—AGUE CAKE.

SYMPTOMS.—Sallow countenance; paleness of the lips and gums; dyspepsia; emaciation; liability to hemorrhage; sense of weight and uneasiness on the left side. When great, the liver may be felt below the border of the ribs on the left side.

In cases in which enlargement of the spleen is slight, none of the above mentioned symptoms may be present.

Cause.—Enlargement of the spleen is a frequent result of malarial poisoning. It generally occurs, to some extent at least, in all cases of malarial disease, and also in typhus and typhoid fevers, and various other acute diseases, especially those of an infectious character. Why this enlargement occurs is not understood, but the most recent view on the subject, as elucidated by Prof. Mosler in Ziemson's Encyclopedia, is that the spleen acts somewhat as a strainer for the blood, and gathers to itself the disease germs and other morbid elements which are circulating in the vital fluid. Numerous experiments which have been made upon animals seem to confirm this view. It is thought by the distinguished author mentioned, that mercury and various other drugs are productive sources of disease of the spleen. It has also been observed as the result of disease of the heart, lungs, and liver.

Treatment.—Recent experiments made by Mosler, Fleury, and various eminent German authorities, have shown very clearly that the cold douche is one of the most effective of all remedies in the treatment of enlargement of the spleen. In cases in which the enlargement is very marked, it is frequently possible to demonstrate an actual decrease in size of the organ immediately after the application of a cold douche. We usually employ in such cases the alternate hot and cold douche, using temperatures as extreme as the patient can bear without great discomfort, and have obtained very excellent results. Various other means of applying heat and cold alternately are also useful. Another remedy of value is the abdominal bandage or wet girdle. It should be worn constantly for several weeks. If irritation of the skin is produced, the bandage may be left off during the day. Vapor and Turkish baths, wet-sheet packs, and other powerful derivative measures, are also useful in the treatment of this affection. There is also some evidence that electricity is a valuable remedy in these cases.

SYMPTOMS RELATING TO THE DIGESTIVE ORGANS.

Under this head we shall notice briefly, for the convenience of the reader, the most important symptoms which require attention in the treatment of diseases of the digestive organs, and which have not previously been noticed at all, or at least but briefly, giving also ready and simple methods of treatment for the same.

Flatulence.—Gas in the stomach and bowels comes from the fermentation of imperfectly digested food. Restrict quantity of food. Avoid starch, sugar, butter, all sweets and fats. Also avoid tea, coffee, chocolate, and all other drinks at meals. Use soft boiled eggs, rare beef, and dry food. Relieve the bowels regularly. Wear wet bandages at night. Knead and percuss the bowels a great deal. Take a teaspoonful of powdered charcoal in a little water after each meal, or eat one or two charcoal crackers.

Acidity.—Avoid sweet and starchy foods, soups, coarse vegetables, raw fruits, and drink at meals. Eat slowly a small quantity. Avoid mixing fruits and vegetables. In many cases milk must be discarded. Find some one or two articles of food which do not produce acidity, and use them exclusively until the stomach gets into a more normal condition. Persons troubled with acidity should be especially careful to avoid drinking at meals or soon after. Water may be taken half an hour before the meal with advantage, especially hot water. As a means of temporary relief, a half-teaspoonful of soda may be taken in a little water; but this remedy should not be often resorted to, as it will do more harm than good in the end. The same is true of magnesia, a very popular remedy for acidity. Charcoal may be used with advantage as recommended for flatulence.

Heart-Burn.—This condition differs so little from the preceding that it is relieved by the same remedies. A very few sips of hot water will sometimes give prompt relief, and if taken a half-hour after the close of the meal, will usually prevent the occurrence of this troublesome condition. The patient must abstain from all sorts of fats and greasy foods most scrupulously, as well as from sweets. In many cases, it is well also to make use of but little flesh food, for a time, at least.

Nausea.—When present soon after eating, give the patient frequent small sips of hot drink, either water alone, or water to which a

few drops of camphor, peppermint, winter-green, or some other aromatic has been added. Also apply hot fomentations over the stomach constantly for an hour or two. The hot-water bag may be used with advantage instead of moist heat. In some cases a few sips of strong lemonade, taken very hot, gives immediate relief. In obstinate cases, the patient may take three or four drops of dilute muriatic acid in a tablespoonful of water, drawing the acid liquid through a glass tube or a straw, to avoid injury to the teeth. If the stomach is empty, small sips of iced water or bits of ice may be swallowed at frequent intervals. Ice to the spine, opposite the stomach, and the local application of electricity—either faradization or galvanization,—are measures to which we have often resorted with success when other means have failed. When the nausea evidently arises from the presence in the stomach of substances which ought to be expelled, as indigestible articles which have been eaten, or the irritating products of indigestion, vomiting should be induced by drinking copiously of warm water and tickling the throat with the finger or a feather. If necessary, a little salt may be added to the warm water.

Vomiting.—Employ the same remedies recommended for nausea, applying them with greater energy and persistence. Sometimes ice to the stomach will give relief when other measures fail. If relief is not otherwise obtained, apply a mustard plaster over the stomach.

Regurgitation of Food.—Many dyspeptics habitually spit up the food eaten very soon after each meal. Often the food is raised to the mouth by an involuntary effort which cannot be controlled by the will, the food spit out being in the same condition as when swallowed. In some of these cases the regurgitation is the result of habit; in others, it is due to a morbid irritability of the stomach. In both classes of cases it is important that the patient should remain very quiet for an hour or two after eating. The food should be dry in character, and restricted in quantity at first, the patient being gradually accustomed to larger quantities until able to take as much as necessary. When the food thrown up is very acid, the remedies recommended for acidity should be employed.

Swallowing Air.—The curious habit of swallowing air, known as wind-sucking, or cribbing, in horses, is sometimes acquired by human beings. After a few acts of swallowing accomplished by much effort, the patient will sometimes belch very large quantities of air. We have

met with but a few cases of this rare disease. The only cure is to watch the patient carefully for a few hours after each meal, compelling him to desist should he be observed in the act of repeating the practice.

Heaviness at the Stomach.—Persons suffering with various forms of stomach derangements often complain of a feeling of weight or heaviness at the stomach after eating, even though the quantity of food taken be very small. This is particularly common in cases of chronic catarrh of the stomach. Relief will usually be obtained by sipping hot water in very small quantities and applying hot fomentations over the stomach for half an hour after a meal. We have cured several patients by having them wear a hot bag over the stomach for an hour or two after each meal. The alternate hot and cold douche daily applied to the spine, opposite the stomach, is an excellent measure of treatment. The wearing of the warm moist abdominal bandage at night is also a good remedy, and may be used with advantage in many cases.

Faintness.—An unpleasant sensation called "faintness," or an "all-gone feeling" occurring before or sometimes after meals is a frequent source of very great annoyance to many sufferers from stomach disorders. One of the best means of relief is taking a few sips of ice-cold water or of hot lemonade. The common practice of eating to relieve the unpleasant sensation, while it affords temporary relief, aggravates the evil in the end. Discontinue the use of condiments; restrict the use of animal food; when very faint, drink a little cold water or a glass of hot lemonade.

Pain in the Stomach.—Apply hot fomentations over the seat of pain. In case this does not give relief, apply ice over the stomach and fomentations to the spine, giving the patient small bits of ice to swallow. A large drink of hot water will frequently stop the pain at once. Cramp in the stomach can usually be relieved in the same way.

Pain in the Bowels.—Apply hot fomentations and administer a hot enema. Repeat applications at intervals of half an hour for two or three hours, if not relieved before. Cramp in the bowels will usually yield to the same remedies.

Pain in Small of Back.—Hot fomentations to the back and stomach afford most prompt relief, though sometimes they must be continued for some hours when the pain is severe, and the patient must be kept very quiet. Daily rubbing of the painful parts, and

the use of alternate hot and cold applications, together with the abdominal girdle worn nights, are also useful measures.

Pain Beneath Shoulder-Blades.—Generally due to disorder of the stomach. Relieved by fomentations over stomach, with daily rubbing, and the application of moist or dry heat to the seat of pain.

Fullness, Weight, and Pain in Right Side.—The various unpleasant sensations felt under the lower ribs upon the right side are partly attributable to disease of the duodenum, and partly to congestion and inactivity of the liver. Fomentations applied daily, with rubbing and percussion of the side, together with the judicious use of electricity and the moist abdominal bandage worn at night, constitute the principal measures of treatment.

Pain under Ribs on Left Side.—A dull pain is frequently felt in this region, due to enlargement or congestion of the spleen. The best remedy is the abdominal bandage worn night and day for a month, and the use of hot and cold applications used in the form of the douche or of compresses rapidly changed. Eminent German authorities pronounce this the best of all remedies for enlargement of the spleen.

Painful Defecation.—In relieving the bowels, many persons suffer with pain, the most common cause of which is hemorrhoids, or piles, which also often occasion a considerable hemorrhage in addition to a dull, heavy pain. A sharp, acute pain is generally due to a fissure or fistula. In some cases the pain is greatest in the act of defecation, in others it is most severe half an hour later. The latter is the case when the pain is the result of fissure. Of course the proper mode of treatment will include radical measures or surgical interference; nevertheless, much can be done to mitigate the sufferings of the patient without a surgical operation. One of the very best means we know of is evacuation of the bowels in steam or warm water. Instruct the patient to sit over a vessel nearly full of hot water, as hot as can be borne without burning. This will so relax the parts as to greatly diminish the pain; and if the contents of the bowels have been softened by an enema, as should always be done, the patient may get along with scarcely any pain at all. We have often relieved in this way persons who had suffered for twenty years without any mitigation of their suffering.

Tenesmus, or Constant Desire to Relieve the Bowels.—This unpleasant symptom is best relieved by an injection into the rectum of cold or even iced water at frequent intervals. Cool or cold hip baths, quite shallow, are also useful in these cases. In some cases, hot enemas give most prompt relief.

Weakness in Bowels.—Apply the cold douche daily, and follow with vigorous rubbing. An abdominal supporter is necessary and useful in many cases.

Loss of Appetite.—Sun-baths, daily massage and inunction, and general tonic treatment, are indicated. Give patient simple food served attractively and not more than three times a day. Let the patient drink a glassful of hot water half an hour before each meal. Create a demand for food, and the appetite will soon come if there is power to digest it. The use of bitters and various tonics is not necessary to relieve these cases. We have frequently remarked a great increase in appetite and recovery from an actual aversion to food by a change from highly seasoned food to simply prepared food consisting chiefly of fruits and grains.

Voracious Appetite.—Self-control is the only sure remedy; but the disuse of stimulating foods will aid very much in enabling a person to control his appetite. We have often recommended persons troubled in this way to eat a morsel of food half an hour before the time for the regular meal. This will often lessen the craving for food sufficiently to enable the patient to keep himself within reasonable bounds.

DISEASES OF THE RESPIRATORY ORGANS.

PHYSICAL DIAGNOSIS.

It is only within the last century that diseases of the lungs have been well understood. The greatest aid to their investigation has been rendered by the discovery by Laennic of the stethoscope, and the perfection of the several means of examination of the lungs employed in "physical diagnosis," which comprise *inspection, palpation,*

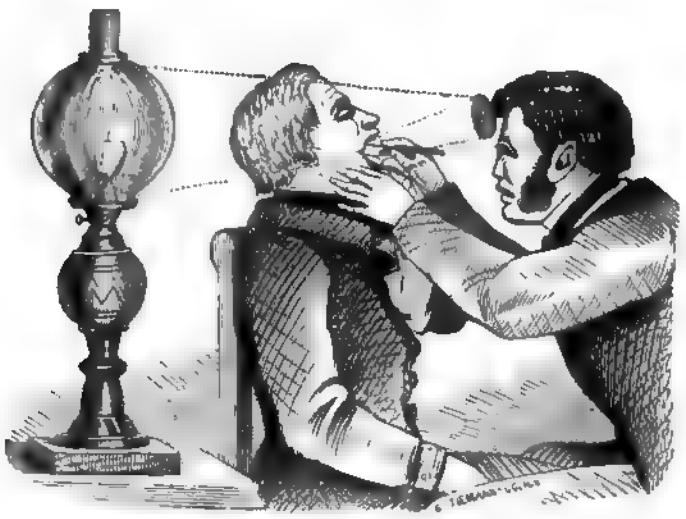


Fig. 296. Using the Laryngoscope.

mensuration, succussion, percussion, and *auscultation.* Of these, by far the most important are the last two. We have space here only for a very brief description of each.

Inspection.—This consists in critically viewing the chest. By this means we discover whether there is proper motion of the walls of the chest, or whether there is unequal motion. We also may discover bulging of portions of the chest from various causes.

By means of an instrument known as the laryngoscope, shown in Fig. 296 it is possible to inspect the larynx and even the upper part of

the trachea. By means of the same apparatus the nasal cavity may be examined. The instrument consists essentially of two mirrors, one of which, a small one, is attached to a handle, by means of which it is held at the back part of the mouth. A strong light is focused upon

Fig. 297.

the small mirror by a larger concave one, which is held in position upon the head by means of a band encircling it. By holding the two mirrors in proper positions, the light may be thrown into the larynx or nasal cavity, bringing all the parts into distinct view. When seen by means of the laryngoscope, the healthy vocal cords appear as seen in Fig. 297 in different stages of respiration. In Fig. 298 the same organs are represented as seen in a case of ulceration of the larynx.

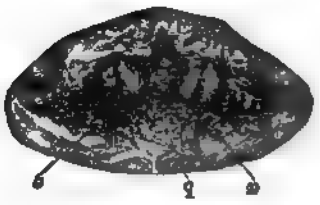


Fig. 298.

Fig. 299 shows a very convenient form of tongue depressor which is very useful in inspecting the condition of the throat, and in connection with the use of the laryngoscope. In the absence of a better instrument for this purpose, the handle of a teaspoon may be used.

Fig. 299.

Palpation is the term applied to examination of the chest with the hands. By the aid of the sense of touch, much may be learned of the condition of the lungs. In health, the resonance of the voice gives to the chest a slight vibratory movement, known as *vocal fremitus*,

which can be felt by means of the hand. This movement is most marked upon the right side, and is increased in diseases which cause solidification of the lungs, as in pneumonia.

Mensuration.—This consists in measurements of the chest. By means of mensuration the degree of mobility of the chest walls and the breathing capacity may be ascertained, also any departure from the natural symmetry caused by the accumulation of fluid in one side, morbid growths, etc.

Succussion is a shaking movement given to the chest for the purpose of detecting the presence of fluid. When air is also present in the pleural cavity, sounds will be produced by the splashing of the liquid serum or pus; if no air is present, no sounds will be heard, even though a considerable quantity of fluid may be contained in the chest.

Percussion.—This is one of the most important of all means for examination of the chest. It consists in striking upon the chest-wall for the purpose of comparing the sounds produced by the percussion with sounds similarly produced in health. Percussion is best performed by placing the forefinger or middle finger of the left hand upon the chest, preferably in the space between the ribs, and striking it a quick elastic blow with the tips of the fingers of the other hand. The force of the blow should be sufficient to elicit a distinct sound. The sounds may be intensified by placing the patient so that his shoulders may rest against a door. Care should be taken to have both shoulders supported equally. The percussion should be performed upon the bare skin or with not more than a single thickness of muslin over the flesh. When performed outside the clothing, as we have often seen it done, nothing accurate can be learned of the state of the lungs. One side of the chest should be compared with the other. Sounds produced in this way differ chiefly in quality and pitch. The sound produced in health by striking the chest has a peculiar resonant quality called *pulmonary resonance.* It is never heard elsewhere. The pitch is low. When this sound is somewhat muffled, it is said to be *dull.* This condition naturally exists at the apex of the lung, above the clavicle, and below the fifth rib on the right side, over the liver. When the resonance is absent, the condition is known as flatness. This sound may be found in health over the kidneys and the lower part of the liver, near the seventh rib. Dullness is found in

pneumonia and consumption, being produced by consolidation of the lung. Flatness is sometimes found in the same diseases and also in dropsy of the chest. *Tympanitic resonance* is another modification of sound which may be found over the stomach and bowels in health. It is noticed in cases in which one side of the chest has been filled with air, the lung itself having collapsed, a condition known as pneumo-thorax. It is also sometimes observed when large cavities have formed in the lungs. In cases in which cavities exist in the lungs, two other peculiar modifications are sometimes produced; viz., *amphoric* resonance, which is produced by a cavity possessing rigid walls, and the *cracked-pot* resonance, produced when the walls are flaccid. The first sound is like that produced by tapping upon a bottle. The second is described by its name, the peculiarity being due to the coming together of the walls when percussion is performed. It is heard only when the patient's mouth is open and placed near to the ear of the examiner.

Fig. 300.

Percussion is sometimes practiced with an instrument called a pleximeter, consisting of a hammer and a small disk, the latter being placed upon the chest-wall and struck with the hammer. The fingers are much more efficient and accurate than any artificial means which has yet been devised.

Auscultation.—Many of the most important indications respecting diseases of the chest are obtainable only by this means, which consists in listening at the chest wall by the ear alone, placed against the chest, or by the aid of an instrument known as the stethoscope, a cut of which is shown in Fig. 300. In auscultation, attention is given to both inspiration and expiration. Each has its particular characteristics in health and in disease. In health, the inspiratory sound is of a peculiar breezy character, and low in pitch; the expiratory sound, if present, very short, and still lower in pitch. The sounds heard over the large bronchial tubes at the upper part of the sternum differ from this quite materially, resembling that produced

by air drawn through a tube, being high in pitch, and the expiratory sound higher than the inspiratory, and continued longer.

The Breathing in Disease.—1. The breathing may be exaggerated. This most often occurs in a portion of lung which is overworked on account of the inactivity of some other portion. It is also heard in emphysema in some cases. It is common in children in health.

2. Diminished breathing is noticed in consumption in the affected portions. It also occurs in some cases of emphysema.

3. The breathing may seem to be suppressed altogether in pleurisy accompanied by a considerable quantity of fluid, in pneumonia, consumption, and obstruction of the bronchial tubes.

4. Bronchial breathing is heard in parts of the chest in which it ought not to occur, in diseases in which the lung becomes solidified, as in pneumonia and consumption.

5. Peculiar sounds are produced by air passing through cavities in the lungs. They are sometimes musical in character, often resembling the sound produced by blowing into a bottle.

6. In chronic bronchitis and emphysema, sibilant or whistling and sonorous sounds often accompany respiration. These sounds are produced by contraction of the air-passages at some points.

Rales.—Certain sounds known as rales are often heard in disease of the lungs, never in health. They are chiefly of four kinds, as follows: 1. Crepitant rales, a fine, dry, crackling sound, heard just at the end of inspiration, not at all in expiration, most distinct just after the patient coughs; heard in consumption, pneumonia, and pleurisy. 2. Subcrepitant rales, a fine bubbling sound, heard in both inspiration and expiration. It occurs in bronchitis, pleurisy, consumption, pneumonia, and in œdema of the lungs. 3. Mucous rales, similar to subcrepitant, but louder and coarser. Heard in pneumonia, acute and chronic bronchitis, and in consumption. 4. Gurgling rales are heard over small cavities. Sibilant and sonorous rales are mucous rales heard with sibilant and sonorous respiration.

The Voice in Disease.—The natural sounds of the voice are much modified by disease. The following are a few of the most important modifications: 1. The voice, or vocal resonance, may be increased, as is usually the case in consumption and pneumonia, and sometimes in emphysema. 2. The vocal resonance is diminished when there is a slight accumulation of fluid in the chest. 3. The voice may be sup-

pressed entirely, as is the case where there are large collections of fluid in the chest. 4. Bronchophony, egophony, pectoriloquy, the amphoric

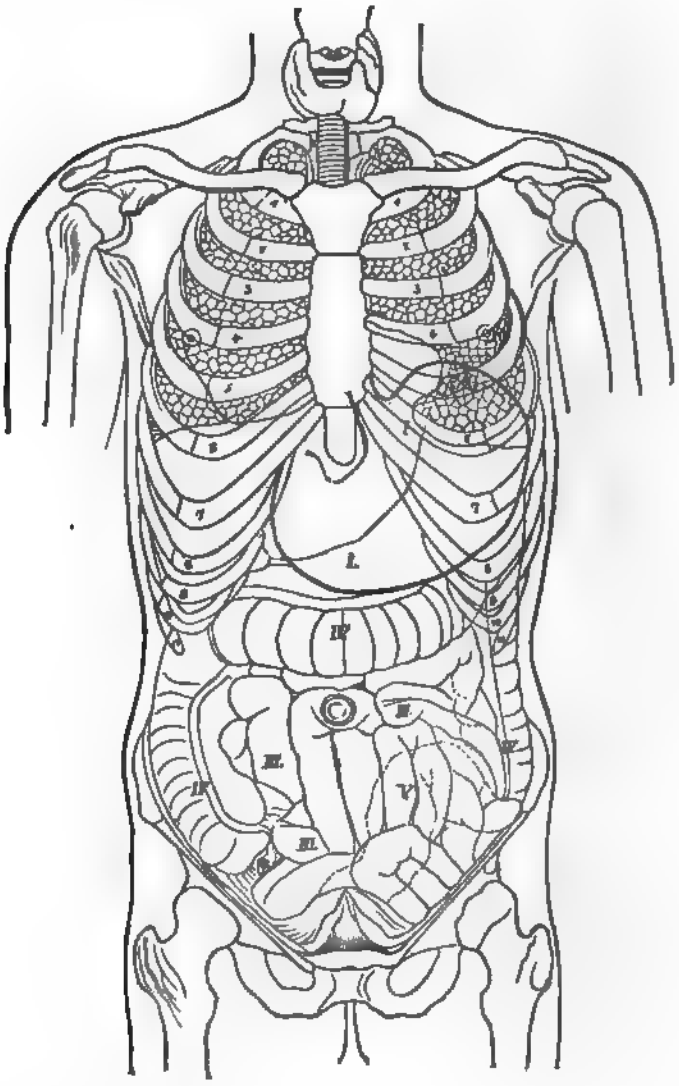


Fig. 301. Outline cut, showing relative position of the internal organs.

voice and metallic tinkling, are peculiar sounds sometimes heard in the chest, each of which has its particular significance, but requires the ear of a skilled examiner to detect.

A correct idea of the position of the lungs in the chest and their relation to other organs may be obtained by reference to Fig. 301, which shows the internal organs in outline.

Expectoration.—Much can be learned of the condition of the lungs from an examination of the matters expectorated, or what is technically known as the sputum. The chief points of interest in relation to the sputum are its consistence, quantity, odor, color, and constituents.

Consistence.—The density of expectorated matter varies greatly. It may be tough or tenacious or a limpid fluid. When very firm, it consists almost wholly of mucus, and is an indication of a high degree of irritability of the mucous membrane. This kind of expectoration generally has the form of little round masses which are raised with great difficulty. When the sputum comes from enlarged bronchial tubes, or from cavities in a consumptive lung, it contains some pus and is less firm. The rounded masses are then somewhat flattened, but retain their form for some time after expectoration. Opaque fluid sputum is usually pus. It occurs in bad forms of bronchitis of long standing, in abscesses of the lung, and in cases of empyema in which an opening into the air passages allows the pus in the pleural cavity to escape into the lung. It often occurs also in the advanced stages of consumption, at intervals. A clear, fluid expectoration indicates œdema of the lung from passive congestion. Frothy mucus, or that which contains much air, floats upon water, while that of greater consistence sinks. When the sputum sinks and retains its rounded form, it is generally supposed to indicate the presence of a cavity in the chest; but the evidence is by no means positive, as the same kind of sputum may occur in bronchial catarrh.

Quantity.—The quantity of expectoration is not very significant, since it may be quite abundant in very mild cases, and scanty in the most severe ones. As a general rule, especially in whooping cough and acute bronchitis, the increase in the quantity of sputum and the disappearance of the difficulty in raising it, occur at the same time. When the sputum becomes scanty, the violence of the cough greatly increases. The sudden cessation of expectoration in a case in which it has been quite copious is a very bad symptom, especially if the patient shows signs of weakness. This is one of the forerunners of death in consumption. A very copious expectoration, as of several tablespoonfuls at a single act of coughing, is indicative of a pulmonary abscess, or of empyema

if it occurs but once, and suddenly. If habitual, occurring perhaps every morning, it is evidence of dilatation of the bronchial tubes.

Odor.—The odor of the sputum is not usually marked; but it becomes very fetid when it is long retained in the lung before expectoration, as in enlargement of the bronchial tubes in cases of chronic bronchitis, in abscess of the lungs, in the putrid form of bronchitis, and in consumptive cases with cavities. The odor is extremely bad in cases of gangrene, when the lung substance is undergoing rapid destruction.

Color.—Red sputum of course indicates the presence of blood. When the blood is not expectorated at once, but becomes mixed with mucus, the sputum will be likely to be reddish brown or very slightly tinged with red. The rusty sputum seen in pneumonia owes its color to the presence of blood. In some cases, after blood has been retained for some time, it gives to the sputum a yellow or greenish color. These colors are generally due, however, to the presence of pus. The occurrence of jaundice in a person who is expectorating freely usually causes the sputum to assume a yellow or green color. The sputum is often colored by dust inhaled, as by coal dust in stokers, miners, and those who labor in coal

Constituents of the Sputum.—Some idea of the constituents of the sputum can be obtained by attention to the points already mentioned; but in cases in which there is any obscurity, a careful microscopical examination of the sputum is of the greatest importance, as by this means much positive information can be gained that will be sought in vain in any other way. The microscope always shows the presence of more or less epithelium in the sputum, which usually comes from the mouth, as shown by its character. See Fig. 302.

Fig. 302. Pavement Epithelium from the Mouth.

In Fig. 303 may be seen a representation of the peculiar ciliated epithelium which comes from the bonchial tubes. It is sometimes found, also, in mucus from the nasal cavity. In red or rusty sputum, red blood corpuscles, as shown in Fig. 304, are usually found. Pus cells are found in putrid bronchitis and in all cases in which there is a destruction of tissue in the throat or lungs, either from consumption or ordinary ulceration. They resemble the white corpuscles of the blood; and, indeed, it is believed that they are, at least

Fig. 303. Cylindrical Epithelium.

in part, identical with the white cells of the blood, which find their way out of the blood-vessels. When destruction of the lung is taking place, fragments of tissue may be recognized by the microscope in the sputum. The most characteristic of these is yellow elastic tissue, fibres of which are shown in Fig. 304. In cases of advanced consumption, these fibres are always found in the sputum, and constitute a sure means of distinguishing the stage of the disease, and of confirming a diagnosis. This means may also be used as a means of determining the rate of progress of the disease. When the fragments of tissue are abundant, the lung is breaking down rapidly; when scanty, the destruction is less rapid; and when they disappear altogether, the destructive process is checked.

Fig. 304. Yellow Elastic Tissue Fiber from the Lungs.

In croupous bronchitis, the sputum frequently contains casts of larger or smaller portions of the bronchial tubes, which may be easily made out by examination of the expectorated matters. A very large cast of this kind is shown in Fig. 305.

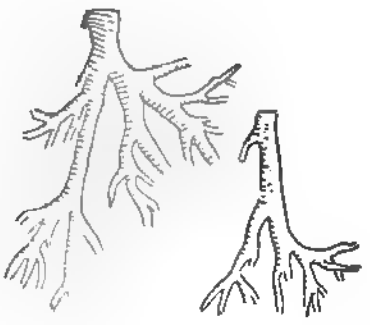


Fig. 305. Cast of Bronchial Tubes.

The sputum often contains various foreign matters, and when putrid, always shows the presence of *bacteria* and various other low organisms which accompany the putrefactive process elsewhere

COLD IN THE HEAD.—CORYZA.

SYMPTOMS.—Chilliness; sneezing; snuffing; lassitude; pain in the forehead; watery discharge from nose, becoming thick and yellow after two or three days; aching in the limbs and back; fever, as indicated by thirst, loss of appetite, and dryness of the skin; eyelids swollen; eyes congested, often suffused with tears.

"Cold in the head" is a simple inflammation of the mucous membrane of the nasal cavity, and is one of the most common of all affections. It is generally thought to be the result of taking cold, as by getting the feet wet, etc., but it evidently has other causes as well. Sudden checking of the action of the skin by exposure to drafts while it is in a heated

state is undoubtedly one of the chief causes. Irritating substances, such as ipecac and fluorine gas will produce this affection in certain individuals. There is also reason for believing it to be contagious, as it may be observed to go through a whole family without there being any other apparent cause than that of contagion. Drs. Salisbury of Cleveland, and E. Cutter of Boston, have recently stated that the disease is caused by certain microscopical germs, which may be communicated from one person to another. Some persons seem to be remarkably susceptible to taking cold in the head, being affected by the slightest exposure. The disease usually lasts from two to seven days and usually terminates in recovery, although when it is frequently repeated in the acute form it may become chronic. In some cases the frontal sinus and the antrum of Highmore become affected, both of these cavities being continuous with the nasal cavity. When they are affected, the headache and pain are very much greater. Sometimes the disease extends into the Eustachian tubes and occasionally also to the ears, thus giving rise to deafness. Several acute diseases, particularly measles, influenza, and typhus fever are ushered in by symptoms of coryza.

Treatment.—The most efficient measures of treatment are rest, diet, and, when the disease is the result of exposure to cold, vigorous measures for securing activity of the skin, as the wet-sheet pack, the vapor, or the Turkish, bath. The pain in the forehead when extreme may be relieved by fomentations over the affected part at the same time that the patient is taking a hot foot or sitz bath. The local symptoms may be relieved by the nasal douche administered with the syphon syringe. A solution of a teaspoonful of salt in a pint of warm water should be employed. The douche may be used two or three times a day with advantage. From one to three quarts may be injected each time.

When there is a good deal of pain in the nose, a snuff composed of camphor and white sugar finely pulverized, in the proportion of two or three grains of camphor to an ounce of sugar, may be employed.

The soreness of the upper lip which often occurs is due to the irritating effects of acrid discharges from the nose. It may be prevented by keeping the lip smeared with oil, cream, vaseline, or some other unguent. The nose should be wiped with a linen handkerchief which should be frequently changed. Neither silk nor cotton should be used. The habit some patients have of snuffing cold water into the nose is a bad one. It

gives temporary relief, but generally protracts the inflammation. When the attack is drawing near its close, a long walk or ride in the open air is one of the most efficient means of cure. We have often known a long ride on a cold day to cure an acute catarrh at once. This is not, however, the proper remedy to apply at the beginning of the catarrh, but only after the severity of the first attack has subsided.

The susceptibility to colds is best relieved by a course of treatment to harden the skin. The most efficient measure is the frequent use of cool baths, as the cool spray, etc. The liability to colds may be greatly diminished by the employment of oil inunctions. This measure is especially useful after hot baths which cause vigorous action of the skin. A cold should receive prompt attention, as many chronic diseases of the respiratory organs originate in this way. The popular idea that a cold is a matter of small consequence and needs little attention as the patient will recover without treatment, is an erroneous one, since colds, when left to themselves, nearly always leave the affected part in a more or less diseased condition.

In adult patients, a cold is not at all dangerous in itself, but very young children not infrequently suffer severely and even fatally from its effects. This is especially true of children who are nursing at the breast. The nasal passages being obstructed, it is very difficult for them to take their food in the usual way. In such cases, infants should be fed with a spoon. If this precaution is not taken, death will sometimes occur from want of sufficient nourishment.

CHRONIC NASAL CATARRH.

SYMPTOMS.—Similar to those of Coryza, but less acute; discharge from the nose, either through the nostrils or throat; formation of greenish scales in the nose; mucous membrane swollen, often obstructing breathing; in some cases, diminished secretion, constituting "dry catarrh;" often offensive breath.

Chronic catarrh of the nose is so common a disease in most parts of the world that it scarcely needs description; at any rate, the above symptoms are sufficient to identify the disease.

Cause.—Among the most important may be mentioned "taking cold," a common coryza becoming chronic catarrh, from neglect of treatment or by being frequently repeated; errors in diet, especially the use of fats and sugar in excess, and an inactive state of the liver, in part due to their effect upon digestion. An inactive state of the liver is nearly always present in chronic nasal catarrh, which is indi-

cated not only by general symptoms, but by the fact that the discharge from the nose, and especially the crusts which are formed, contain quite a large amount of the peculiar poison which is excreted by the liver, known as *cholesterine.*

Nasal catarrh may continue for many years without greatly impairing the general health, but not infrequently patients subject to it suffer with evidences of a general decline which are properly traced to the long-continued drain upon the system resulting from this disease. The local effects of the disease are at first slight, but after it has continued some time often become much more serious. The mucous membrane which was at first only swollen and congested, becomes ulcerated. In some cases the ulceration even extends to the bones of the nasal cavity. In these cases the discharge is exceedingly foul-smelling in character, and is often more or less bloody. We have known cases in which the whole interior of the nasal cavity seemed to be in a state bordering on putrescence. Not infrequently the disease of the bony tissues extends so far as to destroy the septum between the nose and the mouth. Still more serious results arise from the extension of the disease to contiguous organs. The disease not infrequently extends upward into the frontal sinus, a cavity in the skull just above and between the eye-brows. In these cases there is persistant dull aching in this part of the head. Sometimes it extends to the cavity known as the antrum of Highmore, and produces dull, aching inpa in this part. Frequently the catarrhal disease extends into the Eustachian canals, which communicate with the ears, and by extending upward reaches the ear-drum, or tympanum, which thus becomes the seat of chronic catarrh, one of the most common of all causes of deafness. When the disease extends downward from the nasal cavity, the patient suffers with chronic sore throat, or pharyngitis. As the disease progresses in a downward direction, catarrh of the larynx, or laryngitis, and finally bronchial catarrh, or bronchitis, and in some cases even consumption, are produced. We have met with many cases of consumption in which the history of the case clearly showed that it began with catarrh of the nasal cavity.

Treatment.—Notwithstanding the trivial importance usually attached to this disease, we believe it to be one of much greater gravity than might be supposed from the immediate results. Many people suffer from the disease for years, failing to give the matter sufficient

attention to secure recovery. When of very long standing, the disease is somewhat obstinate to cure, and yet we have been able to demonstrate many times in the course of our experience that it is really curable. The measures to be employed are chiefly the following:—

Careful regulation of the diet, all articles of food being avoided which have a tendency to diminish the activity of the liver. As in nearly all cases of catarrh there is chronic torpidity of the liver, it is important that the patient should carefully follow all the directions given for the treatment of that disease with reference to diet as well as other particulars. Butter, sugar, fats, condiments, excess of animal food, and excess of food of any kind, should be particularly avoided. The patient should drink freely of pure water, and live in the open air and sunshine as much as possible, taking an abundance of out-of-door exercise every day. Especial attention should be given to the clothing, which should be carefully adapted to changes in the weather from day to day. The body should always be clothed warmly. Care should be taken to prevent exposure to drafts or any other means which will produce liability to cold. Baths should be employed for the purpose of exciting activity of the skin. Packs, vapor baths, Turkish baths, wet-sheet rubs, and in fact almost every form of general bath may be employed for this purpose. The application of fomentations over the liver and alternate hot and cold applications to the spine are indicated in connection with general treatment.

These measures are essential when a radical cure is expected, and the employment of local measures alone will accomplish very little unless the predisposing causes of the affection are removed by general treatment. Much good can be accomplished, however, by the use of local measures, among the most useful of which may be mentioned the following:—

The employment of saline solutions in the form of the nasal douche or in some other way. A solution which answers as well as any for this purpose consists of a teaspoonful of salt to a pint of soft water. This solution, as well as others which are employed for the same purpose, may be applied to the affected membrane in any one of three different ways: by injecting it into the nasal cavity through the nostrils by means of the syphon syringe; by washing out the nasal cavity in a similar manner, only injecting the fluid into the back part of the cavity allowing it to pass out through the nostrils. These methods of treatment have been already fully described elsewhere. The

solution may also be applied to the mucous membrane by snuffing it up into the cavity. A little of the solution is taken up in the hollow of the hand, which is placed to the nostrils, and by forced inhalations a portion can be drawn up in contact with the affected parts.

When there is an offensive odor to the breath arising from the decomposition of catarrhal discharges in the nose or from injury to the bones, a little carbolic acid in the proportion of 20 to 30 drops to a pint of water may be added with advantage. In very bad cases in which there is a large amount of secretion, which hardens, forming large scabs in various parts of the nasal cavity, it is often necessary to employ, at least at the beginning of treatment, by means of the post-nasal douche, a large amount of an alkaline solution, the object of which is to dissolve or wash away the hardened secretion. It is generally necessary to use from one to three gallons of the alkaline solution, according to the severity of the case. Ordinary soda or saleratus, in the proportion of a teaspoonful to a quart of water, answers as well for this purpose as anything which can be employed. After the nasal cavity has been thoroughly treated with alkaline washes by means of the syphon syringe, applications should be made of a small quantity of fluid, from half a pint to a pint, containing salt and carbolic acid, or a very small proportion of sulphate of zinc. The proportion of the latter should be about five grains to the pint. Chlorine water, a dram to a pint, permanganate of potash in the proportion of ten grains to a pint of soft water, and other mild disinfectant lotions, may also be employed with benefit. When the catarrh has begun to invade the throat, the inhalation of hot steam by means of the steam inhaler (Figs. 273, 274) will do much to check the progress of the disease.

The extension of the disease to the ear and other parts must of course be treated as may be demanded by the particular case in hand. In some cases no method of treatment seems to work successfully, and the patient apparently derives no benefit from anything except change of climate; but we have never yet met with a case so bad that it could not be benefited by a strict compliance with the rules laid down and a thorough employment of the measures mentioned.

OZENA.

SYMPTOMS.—Stuffiness of the nose; swelling of the membrane; headache; general symptoms of acute or chronic catarrh; ill-smelling discharges, sometimes tinged with blood; formation of scabs in the nose, having a disgusting odor; ulceration of the septum or other parts of the nose.

Cause.—Ozena is generally the result of chronic nasal catarrh or repeated attacks of acute catarrh. It is most likely to occur in gouty or scrofulous subjects. It is very frequently the result of polypus of long standing.

Treatment.—The same measures of treatment as directed for chronic catarrh should be employed for this disease. It will be necessary, however, to give great attention to thorough cleansing of the nostrils, for which the solutions of permanganate of potash and carbolic acid will be found useful. A snuff composed of half a dram of chlorate of potash to an ounce of sugar, used two or three times a day, is very serviceable. The disease is often very obstinate, and requires long and thorough treatment to effect a cure.

NOSEBLEED—EPISTAXIS.

SYMPTOMS.—Stoppage of the nose; sensation of pressure in the lower part of the forehead just above the nose; blood flowing from one or both nostrils; sometimes the blood is conveyod into the throat and expectorated instead of proceeding from the nostrils.

Cause.—Hemorrhage from the mucous membrane of the nose is a very frequent result of chronic catarrh in which there is sometimes more or less congestion of the mucous membrane. It also frequently accompanies polypus, especially when ulcers are present. These hemorrhages are of trivial importance, however, and usually stop in a short time of themselves. The most serious cases are those in which there is a morbid tendency to hemorrhage, particularly in persons suffering with hemorrhagic diathesis. The hemorrhage may be excited by some violence, as a blow upon the nose, picking the nose, or thrusting something into it. In persons who have a predisposition to hemorrhage, it may result from eating a hearty meal, drinking tea and coffee or other hot drinks, making violent efforts of any kind, as in running, laughing, or holding the breath. In some persons, hemorrhage from the nose is so easily excited that it is of very frequent occurrence, and is a source of great detriment to the health, and may even shorten life. As a general rule, hemorrhage from the nose be-

comes more obstinate as it is more prolonged, and although the bleeding is not profuse, the patient may suffer great injury on account of the long-continued drain upon the system.

Treatment.—Set the patient upright. Do not allow him to bend forward over a basin of water or anything of the sort. Place to the nose a dry linen handkerchief, pressing the corner of it as far as possible into the nostril from which the blood flows, holding it in place so as to allow a clot to form and close up the bleeding vessels. In the meantime, the patient's arms may be raised above his head, a procedure which will of itself often produce an immediate cessation of bleeding. If the bleeding still continues, throw into the nose with a syringe a strong solution of alum. Tannin and vinegar may be used in the same way. Application of ice to the neck is a very good measure, but bathing the face and snuffing cold water into the nose are measures which rarely accomplish any good. A great amount of good

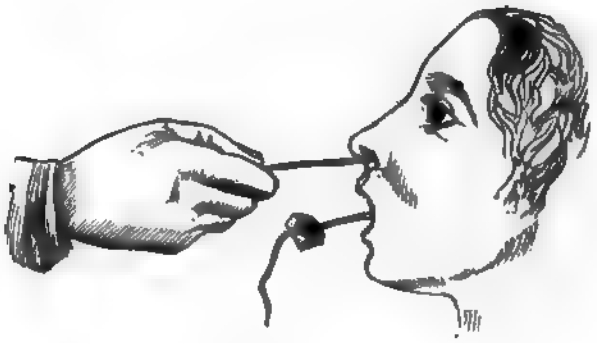


Fig. 306. Plugging the Nose.

may be done by sponging the face with very hot water and snuffing into the nostrils a solution of chlorate of potash, ten grains to the ounce, as hot as can be borne. Hot water itself has a powerful effect to stop hemorrhage, especially when it comes in contact with the fine blood-vessels in the mucous membrane. In extreme cases, the extremities may be ligated so as to withdraw a considerable quantity of blood from the circulation. Care should be taken to warm the extremities, so as to relieve the pressure of blood in the head as much as possible. Some good may be derived from plugging the nostrils with cotton-wool or soft, dry muslin. In the worst cases, however, it becomes necessary to plug the posterior passages from the nose, known as the posterior nares. The best way to do this is quite well shown in Fig. 306. A

strong cord is passed through the nose by means of a gum elastic catheter or something of the kind, and the end is drawn out of the mouth. A plug of muslin or cotton-wool is attached to the cord, and the other end protruding from the nose is pulled upon with sufficient force to bring the plug snugly into place behind the soft palate. This measure rarely fails to accomplish the object for which it is employed. The plug should not be left in place more than forty-eight hours, and a string should be attached to it before it is drawn into position in order to withdraw it, as it must be removed in the same way in which it is applied.

CATARRH OF THE LARYNX.

SYMPTOMS.—ACUTE : *Tickling, burning, or soreness in the throat, aggravated by speaking or talking; painful swelling; voice deeper than natural, hoarse, cracked, perhaps lost altogether; violent cough, easily excited, of a peculiar character, being usually harsh and hoarse; sputum at first scanty and glary or clear; later in the disease the expectoration becomes thicker; in severe cases, interference with respiration, and filling up of the larynx; the latter symptom most likely to occur in children, often mistaken for croup.*

CHRONIC : *Voice permanently impaired, being deepened, coarse, and cracked; occasionally, temporary loss of voice; periodical spasmodic cough; expectoration of yellow, lumpy mucus.*

This disease rarely proves fatal of itself, at least in adults. It is occasionally fatal in children, producing death by suffocation. It is important to distinguish disease of the larynx from pharyngeal disease, as in that affection there is also alteration of the voice, but only in quality, the pitch not being affected. Patients with nasal and pharyngeal catarrh frequently have a nasal or gutteral quality of voice, owing to the contraction of the nasal cavities; but the voice is not deep, hoarse, or cracked. It is also important to distinguish the disease from croup, with which it is very often confounded. The hoarse voice and difficult respiration frequently occur in children suffering from pharyngeal catarrh, but it is by no means so serious an affection as croup. Cases of so-called croup so readily cured by domestic remedies, are really cases of pharyngeal catarrh.

The chronic form of the disease is very obstinate, being subject to frequent exacerbations. Even if the patient recovers, he is very susceptible to new attacks, which occur with such frequency that he can hardly be said to be free from the affection, although the symptoms can usually be made to subside after some little time.

Causes.—The causes of catarrh of the larynx are similar to those

which produce nasal and pharyngeal catarrh. The predisposing causes are general weakness, a stimulating, unwholesome diet, and a disposition to sweat readily, resulting in frequent chilling. The disease may be excited by any one of numerous causes, among which may be mentioned the following: 1. Those which cause local irritation, as breathing cold air, inhalation of dust or irritating vapors, prolonged and loud talking or screaming, and severe coughing. 2. Improper clothing, especially neglect to keep the limbs warmly clad, exposure of the neck, etc. It should be mentioned, however, that more harm is often done by clothing the neck too warmly than by exposing it. Great injury is often done by wearing a woolen comforter about the neck, as it produces perspiration and a relaxed condition of the skin, which renders it unnaturally susceptible to the influence of changes of temperature. 3. Improper diet, particularly the use of condiments and alcoholic liquors, is a frequent cause of laryngeal catarrh. 4. The disease may extend to the larynx from some other part, as from the nasal cavity or pharynx. 5. It may occur in connection with some constitutional disease, as measles or typhus fever. 6. It may be the result of the epidemic form of any fever, when it generally assumes an epidemic form. 7. Catarrh of the larynx is an accompaniment of ulcers and tumors of the larynx, as well as of tuberculous disease of this part.

Treatment.—The most important measures of treatment are those which will prevent the occurrence of the disease. Among these may be mentioned particularly, bathing of the neck and throat with cold water two or three times a day, especially in the months of the year in which the disease is most likely to occur. Careful attention should also be given to the clothing; particularly for the limbs. If the feet become wet by exposure they should be quickly dried and warmed. It is also important that the diet should be carefully regulated. Condiments and spirituous liquors, as well as fats, sugar, pastry, sweetmeats, preserves, etc., should be carefully avoided, as they have a marked tendency to produce a predisposition to this disease by clogging the liver and deranging the digestive organs. It is also important to call attention to the mistake often made by patients who fear this disease, of protecting themselves too carefully. Over protection is as serious an error as deficient protection. The persons most liable to the disease are those who shut themselves up in-doors most carefully. Wearing thick furs or other clothing about the neck

in cold weather is a very injurious practice, as it causes perspiration and relaxation of the skin of that part, which makes it in the highest degree susceptible to changes of temperature. The neck should be gradually accustomed to cold temperatures, just as are the hands and face, and should be protected only when absolutely necessary. In acute cases, loud or long continued talking or laughing should be forbidden. In some cases, absolute silence must be enforced. The patient should be urged to resist the tendency to cough as much as possible. In the majority of cases it will be found that coughing can be controlled by an effort of the will if the patient has sufficient force of character. Coughing increases the irritation without doing any particular good. The throat can generally be cleared by a slight effort without the prolonged hacking cough in which many patients indulge. No matter if the patient declares that he cannot help coughing, it must be insisted upon that he shall abstain from doing so.

Where the disease is the result of taking cold, the patient should be subjected to such measures of treatment as will secure thorough sweating. The patient may be given a sweating pack, vapor bath, hot-air bath, Turkish or Russian bath. To encourage perspiration, teas of various sorts may be given. Tea made of elder-blossoms is in considerable repute for this purpose; but it is probably not superior to warm water. Fomentations should be applied to the throat, and the patient may also inhale the vapor of water as hot as it can be borne. The most convenient apparatus for this purpose is the form of inhaler we have devised for such cases and used quite extensively in diseases of the larynx, shown in Figs. 273, 274. Alternate hot and cold applications to the throat are also beneficial. Mustard plasters and stimulating poultices are sometimes used, but we have never found them necessary. The diet of the patient should be carefully regulated. He should avoid butter, pastry, fat meats, etc. He should also abstain from the use of sugar and sweetmeats of any kind. The more closely he restricts himself to a diet of grains and fruits, preferably those of an acid character, the more favorable opportunity he has for making a good recovery.

In a chronic case of laryngitis, it is necessary for the patient to give the most scrupulous attention to his diet for a long time. In the majority of cases it will also be necessary to treat the patient for functional diseases of the liver and stomach, which almost always accompany diseases of the larynx. Sometimes change of climate is

necessary, but we believe that the majority of cases can be cured by a careful regulation of the regimen. Tonic measures should be adopted for the improvement of the general health, such as the application of electricity, massage, and inunctions, together with such baths as will secure activity of the skin, applied not so frequently as to produce any degree of prostration. Local treatment by means of the inhaling apparatus is invaluable in catarrh of the larynx as well as pharyngeal catarrh. For vapor inhalation, nothing is better than tincture of gum benzoin, in the proportion of ten drops to the ounce of water, using the inhaler shown in Fig. 274. We have used this remedy a great deal in cases of this kind, and have found that good results were obtained from its use, though we have never been able to ascertain with certainty that any better effects were obtained when the drug was used than when the patient was treated with pure steam. Atomized fluids are of real value in these cases, the best solutions for inhalations being common salt in the proportion of ten to twenty grains to the ounce of water, and alum in the proportion of five to ten grains to the ounce.

To allay the paroxysms of coughing and difficulty of breathing which not infrequently occur in both the acute and chronic form of the disease, the best of all remedies is the application of a sponge dipped in hot water to the throat, repeated until the skin is considerably reddened. The patient should be allowed to drink freely of hot water or hot lemonade at the same time. In cases of children suffering from the disease, the drinking of an abundance of liquid is particularly important. The child should be prevented from sleeping soundly, and should be frequently awakened and made to drink freely of warm or hot water. The use of hot drinks or hot water applied by a sponge is very strongly recommended by Niemeyer for this class of cases.

It is very important that the treatment of this disease should be prompt and energetic, and it should be unremitting until a cure is effected, since when neglected it very often leads to consumption of the throat or tubercular laryngitis.

CROUP.

SYMPTOMS.—At first, those of a slight cold, or catarrh,—slight fever, hoarseness, cough, running at the nose; after a few hours, fits of coughing, increased hoarseness, and harassed respiration, spasm of the muscles of the throat; characteristic symptoms now appear,—brassy, ringing, or barking cough, accompanied with a crowing sound, increased

fever, embarrassment of the respiration, irregularity of the pulse, features expressive of distress, patient worse at night and better toward morning; in fatal cases, drowsiness increases, breathing becomes more embarrassed, lungs congested, skin covered with cold sweat; finally, coma, asphyxia, and death.

Causes.—The causes of croup are not thoroughly understood. They are probably similar to those which produce acute catarrh of the larynx. Indeed, it is held by some that croup is identical with acute catarrh of the larynx in adults, the difference in severity being due to the age of the patients. It occurs most frequently in children from two to six years of age, more often in boys than in girls. The disease is characterized by the formation of a false membrane in the larynx and trachea. It sometimes also affects the pharynx. The danger to life is from suffocation through accumulation of the false membrane.

Treatment.—The old treatment, by applying antimony, mercury, and blisters, was in the highest degree unsuccessful. According to Tanner, one-half the persons treated by this plan died. The disease is a very severe one and sometimes difficult to manage, but with proper treatment from the first, few cases will prove fatal.

Apply hot water to the throat by means of sponges or flannels wrung out in hot water as directed for acute catarrh of the larynx. If relief is not quickly secured, exchange the hot applications for cold ones, and if some relief is obtained, keep the cold constantly applied. If necessary, employ ice compresses. This measure must be employed thoroughly to be of any value whatever. Used early in the disease, it will prevent the formation of the false membrane. If it is not employed early enough or with sufficient thoroughness to accomplish this, measures must be employed to secure an early separation of the false membrane from the mucous membrane of the larynx. For this purpose hot and cold applications should be applied to the throat, and the patient should be made to inhale the vapor of hot water, as hot as it can be borne and as large a portion at a time as possible. The vapor may be inhaled through the apparatus for the purpose, represented in Fig. 274, or from a tea-kettle or tea-pot. A paper cone may be arranged in such a way as to conduct the steam to the patient's mouth. A very excellent method of generating steam for this purpose is to slake lime in a tea-pot, and have the patient inhale the vapor through the nozzle. We have used this method on several occasions with complete success. The vapor of warm vinegar is also sometimes useful. Among the most serviceable remedies for causing sep-

aration of the false membrane may be mentioned lime-water, vinegar, and a strong solution of chlorate of potash taken by means of an atomizer. The chlorate of potash solution should be hot when taken, and the patient should inhale it a large part of the time.

It is of the greatest importance that the temperature of the room in which the patient is placed should be carefully regulated. The air should also be kept thoroughly saturated with moisture by boiling water or by means of slaking lime. The latter method has been frequently employed with success, the lime being placed in a tub near the center of the room or near the patient, and water applied to it. Sponging of the hands, feet, arms, and limbs is also recommended for this disease.

If the patient becomes so greatly exhausted that he loses the ability to cough, although the membrane may be separated sufficiently to allow expectoration, means should be adopted to restore the patient as much as possible. Dr. Niemeyer recommends placing the patient in a warm bath and pouring cold water on his head, the back of the neck, or spine, for the purpose of exciting increased nervous activity, particularly to excite cough, thus enabling the patient to throw out the loosened membrane. In case all other measures fail, and suffocation seems impending, as shown by increased difficulty in breathing, blueness of the skin, etc., the surgical operation of laryngotomy or tracheotomy should be performed. This consists in making an opening into the larynx or trachea and passing in a silver tube through which the patient can breathe. Life has sometimes been saved in this manner.

ŒDEMA OF THE GLOTTIS.

SYMPTOMS.—Hoarseness, rapidly increasing until the voice is lost; harsh, barking cough; inspiration laborious, long-drawn, and whistling; expiration short, easy, and generally inaudible, though sometimes noisy; patient complains of "something in the throat;" other symptoms similar to those of croup.

This is a condition in which the tissues about the epiglottis and upper part of the larynx become the seat of a watery swelling similar to that which often affects the feet, ankles, and lower eyelids. If the finger is passed into the throat, two hard swellings, sometimes as large as a pigeon's egg, may be felt at the root of the tongue; and when the patient attempts to fill the lungs, these swellings are drawn together, and close the opening at the top of the larynx so that inspiration be-

comes extremely difficult. They may sometimes be seen by making the patient open the mouth widely and pressing the tongue. The disease occurs most commonly in adults, in which respect it differs from croup, which is most frequent in children. The principal exciting causes are acute catarrh, laryngitis, erysipelas of the face, and occasionally small-pox, consumption of the throat, and Bright's disease.

Treatment.—The old prescription for this disease reads about like this: "blood-letting, leeches in large numbers to the throat, emetics, cathartics, etc.;" but we believe with Niemeyer that such treatment is worse than useless in this disease, as well as in croup. According to the learned authority quoted, the local application of ice is of far more value than any of the remedies mentioned. Indeed, we believe this to be by far the best remedy for this disease. The patient should be instructed to hold small pieces of ice in the back part of the mouth, frequently swallowing a small piece. Ice may also be applied externally. We prefer for external application, however, alternate hot and cold applications made with a sponge and a piece of ice. The sponge should be dipped in hot water, slightly pressed, and applied to the throat as hot as the patient can bear, and held in position for a few minutes. It should be followed by rubbing the throat with ice for two or three minutes. This treatment should be used in conjunction with ice internally.

If there is rattling in the throat, and evidence of the presence of considerable mucus, the patient should drink freely of warm water. If possible, enough should be taken to produce nausea and vomiting, as the effort will frequently relieve the embarrassment of breathing. In case other measures fail, a surgeon should be called in to puncture the swollen parts, which will give very speedy relief.

SPASM OF THE GLOTTIS—LARYNGISMUS STRIDULUS.

SYMPTOMS.—Interruption of breathing; fingers and toes rigidly contracted; patient struggles for breath; becomes black in the face; suffocation threatens; spasm generally ceases after a few seconds, patient drawing a long breath with a whistling or crowing sound.

This affection consists in a sudden contraction of the muscles which control the vocal cords, by means of which the narrow opening between the cords, called the glottis, is closed, preventing the entrance of air into the lungs. The disease occurs most frequently in children, particularly in infants nursed with a bottle and most frequently dur-

ing teething. Spasms may occur at intervals of a few hours, days, or weeks. The disease also occurs frequently in adults, especially hysterical females

Treatment.—To relieve the spasm, apply cold water to the head, face, and chest. Slap rharply the chest and back. Open the mouth of the patient and draw the tongue forward, having the thumb and finger protected by a handkerchief or thin towel. Putting the patient into a hot bath will sometimes give immediate relief. If these measures fail, apply artificial respiration as elsewhere directed. As patients suffering from this disease are likely to become more and more susceptible to it, it is important that such measures should be taken as will remove the liability to this alarming and not infrequently fatal affection. The principal measures for this purpose are proper attention to the diet, which should be very simple, abundance of exercise in the open air and sunshine, frequent bathing, etc. In teething children, it is often necessary to lance the gums. It should always be done when the gums are found tender and swollen.

THROAT CONSUMPTION—LARYNGEAL TUBERCULOSIS.

SYMPTOMS.—Chiefly those of acute and chronic laryngitis; in addition, shortness of breath; hectic fever; emaciation and general debility; pulmonary consumption.

This disease most often occurs in the latter stages of pulmonary tuberculosis, or consumption. It occasionally occurs as an independent disease. Its causes are essentially the same as those which are elsewhere described as productive of tubercular disease of the lungs. The disease cannot be readily distinguished from other affections of the larynx unless the patient is also suffering from lung disease of some character.

Treatment.—The treatment is essentially the same as that recommended for chronic catarrh of the larynx. Little can be hoped for, as the disease is almost always fatal. However, much can be done to palliate the sufferings of the patient. Drinking a glass of hot milk early in the morning will frequently relieve the harassing morning cough to a considerable degree. The patient must be required to abstain as much as possible from "hawking" and coughing, which are exceedingly annoying in this disease. The employment of hot vapor inhalations and chlorate of potash spray are found the most useful internal remedies. Local applications to the throat are also of some service. It is important that the patient should be kept in a warm, moist atmosphere as much as possible. Attention should be given to the general health, as directed for pulmonary consumption.

PARALYSIS OF THE GLOTTIS—LOSS OF VOICE—APHONIA.

SYMPTOMS.—Complete or partial loss of voice; in slight cases, only hoarseness or deep monotone voice.

This affection appears in two forms, as the result of functional disease or of some organic affection. The first form is more frequent in women, with whom it is a symptom which frequently accompanies uterine disease. The patient frequently speaks only in a whisper for a long time, then entirely recovers the voice again. When long continued, it becomes nearly as serious as the graver form of the disease, in which there is some structural derangement. This form is most frequently caused by disease of the larynx, as acute or chronic laryngitis, ulceration of the larynx, pressure upon the nerves which control the part by tumors of some sort, and disease of the brain.

The diagnosis of this affection is made conclusive by occular examination of the larynx by means of a laryngoscope, the use of which is illustrated in Fig. 296. By means of this instrument the skilled operator can inspect the vocal cords, and thus discover whether or not there is a lack of proper motion in the act of breathing or attempting to speak.

Treatment.—For the functional form of the disease, electricity is a valuable local means of treatment. In applying this agent, one pole should be applied over the upper part of the sternum, and the other upon that part of the larynx familiarly known as "Adam's Apple." In some cases a cure has been effected by a single application of electricity, and the patient generally experiences some benefit from the treatment almost immediately.

Alternate hot and cold applications, together with rubbing of the throat with cold water, are also useful. Great attention should be given to the general health and the removal of the local disease, of which this affection is in these cases generally a symptom. In the treatment of the more severe form of the disease, special attention must be given to the particular cause of the disease, by the removal of which the patient will show a marked improvement, although some cases of this affection are of course incurable, it being in these cases the result of causes which cannot be removed.

ACUTE BRONCHITIS.

SYMPTOMS.—Shivering, sometimes distinct chill; slight fever; tightness about the chest; cough, at first dry and hard, with expectoration of glary, frothy mucus; afterward, copious yellow sputum; headache; lassitude; coated tongue; little appetite; frequently humming or rattling sounds in the chest.

This disease frequently accompanies catarrh of the larynx. It is not infrequently that we have nasal catarrh, catarrh of the larynx, and bronchial catarrh combined. A severe attack of this sort is frequently termed catarrhal fever. When there is severe frontal headache, soreness of the limbs, and pain in the joints with tenderness, the patient is frequently said to have catarrhal rheumatic fever. At the beginning of the disease, the patient feels as though his "chest is stopped up," coughs hard and expectorates but little, as the secretion is scanty. After a few hours or days, the secretion becomes much more abundant and is expectorated easily, and the cough is said to be "loose." The causes of this affection are precisely the same as those which cause catarrh of the larynx, hence, we need not recapitulate them here.

Treatment.—The treatment for this disease should be precisely the same as that recommended for acute catarrh of the larynx, with the exception that the local treatment should be administered to the whole chest and not to the throat alone. Great advantage will be derived from the frequent or continuous inhalation of warm vapor and the constant wearing of warm, moist compresses on the chest during the intervals of treatment.

No measures of general treatment will at all compare with those which excite vigorous action of the skin, as the warm blanket pack, the wet sheet pack, and the Turkish, Russian, or vapor, baths.

The diet should be restricted to very simple, unstimulating food, such as fruits and grains, and should also be limited in quantity. Decided benefit may be derived in the majority of cases by drinking very freely of warm mucilaginous drinks. A number of glasses, six to ten, should be taken during the day.

A dry, cold, atmosphere should be avoided in the winter time. The patient should remain in-doors most of the time, so as to secure a uniform, warm, moist atmosphere. This measure must not be carried to an excess, however; and while the patient is confined, care should be taken to secure for him proper exercise by means of calisthenics, med-

ical gymnastics, etc., together with massage and an abundance of fresh pure air. The employment of expectorants and the hundreds of familiar remedies which are recommended as "sure cures" for a "cold," in the majority of cases do no good, but positive harm. In case expectoration is exceedingly profuse, it may often be diminished somewhat by inhalation, by means of the inhaler previously described (see Fig. 274), of vapor of tar, in the proportion of a dram to an ounce of water.

In young children suffering from the disease, the lungs are likely to be choked with the expectoration, on account of the inability to remove it by coughing. If the evidence of accumulation is very great, it may be necessary to employ a mild emetic to induce vomiting, by which means the accumulated mucus may be dislodged. This may frequently be done also by causing the child to cry violently by placing it in a cold bath, rubbing the feet with a brush, or some similar means.

CAPILLARY BRONCHITIS.

SYMPTOMS.—Those of acute bronchitis, to which are added great frequency and difficulty of breathing; if the patient can talk, speech is short and jerking; nostrils dilated at each breath; face swollen and congested; countenance indicating great distress; great restlessness; more frequent pulse, cough ineffectual; rattling in the chest.

This form of bronchitis most frequently occurs in children. It affects the smaller bronchial tubes, not the smallest, and is much more dangerous than the preceding on this account. In very young children it is a fatal disease, as the bronchial tubes are so small in infants that they become easily obstructed, which occasions collapse.

Treatment.—The ordinary methods of treating this disease are by no means successful. The most useful recommendation found in the text-books is to avoid any weakening measures, and to endeavor to maintain the patient until nature can have time to effect a cure. In the treatment of a number of cases of this disease, we have become satisfied that much can be done to facilitate recovery if thorough and prompt measures are taken at the outset. As soon as the nature of the difficulty is discovered, the patient should be given a blanket pack so as to induce free perspiration. This will almost invariably bring marked relief to the most urgent symptoms, and it should be repeated as often as necessary—as frequently as two or three times a day if demanded by the urgency of the symptoms. This measure, together with the inhalation of steam, will often effect almost marvelous re-

sults. If the patient is too young to use the inhaler, the atmosphere of the room should be kept warm, not less than 75°, and the atmosphere should be kept moist by boiling water in a large iron kettle on the stove, or by slaking lime. Care should also be taken to secure an abundance of fresh air.

CHRONIC BRONCHITIS.

SYMPTOMS.—Habitual cough; shortness of breath; copious expectoration; symptoms of acute bronchitis, with less intensity.

The causes of chronic bronchitis are essentially the same as those of the acute variety. In fact, it is most commonly produced by the frequent occurrence of acute bronchial catarrh. It is always associated with an inactive condition of the liver and with more or less impairment of the digestion. When it continues a long time there is usually more or less debility. In consequence of the obstruction, the small bronchial tubes become greatly dilated. This affection is known as emphysema. When it is present, the patient suffers much from labored breathing, the chest is generally enlarged, and the space between the ribs is abnormally depressed.

Chronic bronchitis is seldom a direct cause of death, but may lead to a fatal result by producing other diseases. It is often mistaken by unskillful persons for consumption, a much more grave disease; but a careful examination will show the absence of the symptoms characteristic of the latter disease.

Treatment.—The first attention should be given to the diet, which should be wholly unstimulating in character, consisting chiefly of farinaceous articles of food. Eggs and milk may also be allowed, and when the digestive organs are somewhat enfeebled, especially if the patient is troubled with acid or flatulent dyspepsia, fish and meat in moderate quantities need not be interdicted. Many patients suffering with emphysema are given great inconvenience by gas in the stomach and bowels. Such persons should avoid the use of vegetables, sweets of all kinds, tea and coffee, and all kinds of alcoholic drinks. Silk or woolen should be worn next to the skin. The patient should be careful to protect himself against changes of temperature, and should dress sufficiently warm to keep the skin active. The measures of treatment indicated are such as will increase the activity of the skin, as the pack, inunction, rubbing wet-sheet, hot-air bath, and Turkish bath. After

each bath, especially in the cold season of the year, an inunction of purified cocoa-nut oil, vaseline, or some other unguent, should be employed to prevent taking cold. The patient should spend as much of his time in the open air as possible, engaging in gentle exercise.

For local treatment, no measure is of more value than the inhalation of hot vapor and the spray of hot water. When expectoration is excessively copious, inhalation of vapor of tar may be employed, as already directed, page 806, or the patient may inhale the spray produced by the atomizer from weak solutions of lime or tannin. When the patient is troubled with a dry, harassing cough, relief will almost certainly be afforded by the inhalation of hot vapor. Daily fomentations should also be applied over the chest. These applications should be followed by sponging the chest with cold water to tone up the relaxed skin.

As an inactive condition of the liver is very common in this disease, it should receive such attention as has been already directed for that condition.

In some cases, it will be necessary to make a change of climate, although the benefits derived from this measure are not always as great as are supposed. Probably one of the greatest advances made in the treatment of emphysema, which is one of the most serious results of this affection, is what is known as the "Pneumatic" treatment. This mode of treatment has been elsewhere described. (See page 681.) We have recently adopted this treatment for this class of cases, employing Waldenberg's apparatus, constructed for us by Reynders, of New York, and have observed good results. We have under treatment at present a number of patients suffering with the disease in different stages, for whom we hope to obtain a marked degree of benefit in due time by this mode of treatment.

The "grape cure" has been very strongly recommended for chronic bronchial catarrh, and has been employed very successfully, especially in cases in which there is a scanty and tenacious secretion expectorated by violent coughing. It is probable that in cases of this kind the cure is not due to any specific principle in the grape, but from the simple diet and the taking of large quantities of fluid.

Patients suffering with emphysema should exercise great care to avoid severe coughing, and should always restrict the tendency to cough as much as possible, as violent efforts increase the irritation and aggravate the difficulty. The employment of narcotics in allaying

cough in the different forms of bronchitis is often productive of bad results. In the chronic form of the disease the patient soon becomes so dependent on the narcotic, the dose of which must be very rapidly increased, that before he is aware of it he finds himself in the unhappy position of an habitual opium-taker. The best authorities also deprecate the employment of expectorants.

WINTER COUGH.

This is a mild form of chronic bronchitis which affects the patient only in winter. It is, in fact, the precursor of the more formidable disease. The patient takes a cold at the beginning of winter, and does not get entirely rid of it until the commencement of warm weather. He is then free from the cough until the following winter, when another cold is contracted which hangs on a little longer than before, perhaps lasting a good part of the summer. The next fall a cold is contracted earlier than before, and the following summer the cough does not disappear entirely. Now the patient is really suffering with chronic bronchitis; and this is the way in which the majority of cases begin.

Treatment.—The treatment for winter cough is the same as recommended for chronic bronchitis. For tightness in the chest, nothing will give so prompt relief as a hot fomentation at night followed by inhalation of the vapor of hot water, and a moist compress to be worn upon the chest during the night.

BRONCHIAL CROUP, OR CROUPOUS BRONCHITIS.

SYMPTOMS.—Expectoration of casts of bronchial tubes; dry cough; bleeding from lungs; some difficulty in breathing; often begins with chill, followed by fever and pain in side; may be acute, or chronic.

This is a rare disease. Bronchial croup may occur from extension of the disease from the larynx into the large bronchi, or from the air-cells into the small bronchial tubes; but in this affection the croupous process is confined to the bronchial tubes, usually those of moderate size. The disease is sometimes acute, but is more often chronic, existing for years, in many cases the patient coughing up daily, or at longer intervals, casts of some portions of the air-passages.

Treatment.—This disease must be treated upon the same general plan recommended for croup of the larynx. Careful attention to the

general health, and the daily employment of hot and cold applications to the chest, and inhalations of hot vapor, will accomplish more than any other remedies.

ASTHMA.

SYMPTOMS.—Patient suddenly attacked, or after premonitions of headache, sleepiness, etc., or an attack of indigestion; great difficulty of breathing; chest becomes distended, since the air cannot be easily forced out of the lungs after inhalation; loud wheezings or whistlings heard with each breath; sense of constriction about chest; pulse feeble; lips purple; eyes staring; attacks most likely to occur in the night, often being periodical.

This disease is often confounded with others in which there is difficulty in breathing, as in disease of the heart, other affections of the lungs, etc. Asthma proper is a purely nervous disease. It consists in a muscular contraction of the smallest bronchial tubes, those next the air-cells, by which the air is prevented from passing out of the cells after it has been breathed in. The patient complains of inability to "get his breath out," notwithstanding efforts so vigorous that he is bathed with perspiration. In fact, the more severe the effort, the less effectual, in the majority of cases, as the difficulty is aggravated by the attempt to overcome it. Asthmatic attacks sometimes occur periodically, without any apparent exciting cause; but in most cases there is some cause to which each particular attack is attributed by the patient. The most common causes are excessive muscular exertion, taking cold, inhalation of sulphurous fumes, or of some other irritating substance, as dust from the sweeping of carpets, etc. The emanations from feathers is not infrequently the cause of asthmatic seizures. Many persons have suffered for years in consequence of sleeping on feather beds or pillows, being wholly ignorant of the real cause. This disease is often tolerated for years, rarely causing death, but ultimately undermines the patient's health. Chronic sufferers from asthma are usually thin, sallow, and hollow-cheeked. In the great majority of cases, asthma is connected with some other serious disease; as chronic bronchitis, emphysema, dyspepsia, disease of the liver, and, in females, disease of the uterus. Males are affected much more frequently than females.

Treatment.—When the attack is occasioned by indigestion, and there is undigested food in the stomach, give the patient an emetic of warm water at once. Small bits of ice swallowed, or a cup of strong coffee, will often give relief. Give the patient plenty of fresh air, but be careful to avoid chilling. A remedy very successful in many cases is

the hot sitz bath accompanied by fomentations to the chest and cold applications to the spine. Electricity is also a very useful agent. In some cases, we have obtained relief by the use of this agent when all others failed. A remedy very strongly recommended by a physician who is himself a sufferer from asthma is the following: Breathe out slowly and wait after the lungs are emptied as long as possible; then fill the lungs and hold the breath as long as possible. Repeat the process several times. Nitre paper, made by soaking blotting-paper in a solution of saltpeter and drying, when burned, gives off fumes, the inhalation of which gives almost magical relief. The most effective of all measures of treatment, however, is the inhalation of compressed air and exhalation into rarefied air by means of a pneumatic apparatus. The most of these measures are simply palliative. In order to cure the disease, the real cause must be ascertained and removed. Every attention must be given to the general health and to the special morbid conditions which may be suspected of being a cause of the difficulty. The patient must avoid all the known exciting causes. A pure, dry atmosphere should be sought; but the same climate is not best for all patients. Wind, dampness, dust, and smoke must be sedulously avoided. Fomentations over the liver two or three times a week, the moist abdominal bandage, worn nights, and sufficient eliminative treatment to secure activity of the skin, such as packs, Turkish, or hot-air, baths, etc., are measures which we have found of real value in the treatment of a good many cases of this disease.

SPASM OF THE DIAPHRAGM.

SYMPTOMS.—Breathing very difficult and slow, expiration twice as long as inspiration; abdominal muscles hard; face blue; no wheezing or whistling.

This is a peculiar form of asthma in which there is a rigid contraction of the diaphragm. The patient is troubled greatly to expel the air from his lungs.

Treatment.—The same remedies recommended for ordinary asthma should be applied. The hot bath, fomentations to the chest, and ice compresses to the spine will be found particularly serviceable. In severe cases, opium or chloroform are required to relieve the spasm.

HAY ASTHMA, OR HAY FEVER.

SYMPTOMS.—Usually begins with weakness, coated tongue, diarrhea, alternating with constipation, general debility, and sleeplessness; sometimes begins suddenly; tickling in the nose; coryza; prolonged and violent sneezing; swelling and redness of the eyes, with evidences of acute mucous inflammation; tickling in the throat, with dryness or slight burning; sometimes slight deafness; bronchial catarrh; great difficulty in breathing, with tightness about the chest and croupy symptoms; attacks most frequent in daytime, instead of night as in nervous asthma; sometimes frequent chills followed by considerable fever.

This curious disease has been very closely studied for a number of years, and yet its cause is, at the present date, still undetermined. It has been believed by many eminent physicians that the disease is caused by the pollen of plants or grasses, and experiments conducted by an eminent German physician seem to confirm this view; but it has not been determined what particular plants furnish the noxious pollen. Attention has been specially called to the rag-weed, a very common plant almost everywhere, as it has been observed that the occurrence of the disease in a large number of persons is simultaneous with the flowering of this plant. We have frequently been told by patients that they believed this to be the cause of the disease in their particular cases at least. On the other hand, there are those who hold the disease to be chiefly a nervous disorder. Our friend, Dr. Geo. M. Beard of New York, has collated a large number of facts upon this subject which seem to show beyond any room for doubt that one of the essential causes of the disease is individual idiosyncrasy. The exciting cause is probably different in individual cases, which accounts for the fact that different persons are affected at different seasons of the year. The disease usually lasts four to six weeks, and leaves the patient almost as suddenly as it appears, in some instances observing in its departure the very same regularity, even to the hour, as is observed in some cases in its commencement. The disease is rarely or never fatal, but usually leaves the patient weak and debilitated.

Treatment.—The author of the article on hay fever in Ziemssen's Cyclopedia of Medicine says, "Treatment is still powerless against hay fever." It has long been considered as settled that drugs are of no value in the treatment of this affection. We have found, however, that by the employment of Turkish, vapor, Russian, and similar baths, the patient's sufferings may be very greatly mitigated, more than by any other means. For several years we have annually had a number of

these cases under treatment, and have found that in nearly every case the disease can be controlled by the treatment named. In most cases the patient is very greatly relieved while in the bath, and the relief continues for some time after. If care is taken in the interval of treatment to avoid exposure to the cause of the malady, in nearly all cases the attack can be greatly lessened in severity, much shortened, and, in some cases, broken up altogether The employment of the hot-vapor inhalation is another remedy of great value in cases in which the asthmatic symptoms are prominent. Hot and cold applications to the spine are also useful in some cases. In many persons the real disease is aggravated by taking cold. It is superfluous to say that the greatest care must be exercised to avoid any aggravation of this sort.

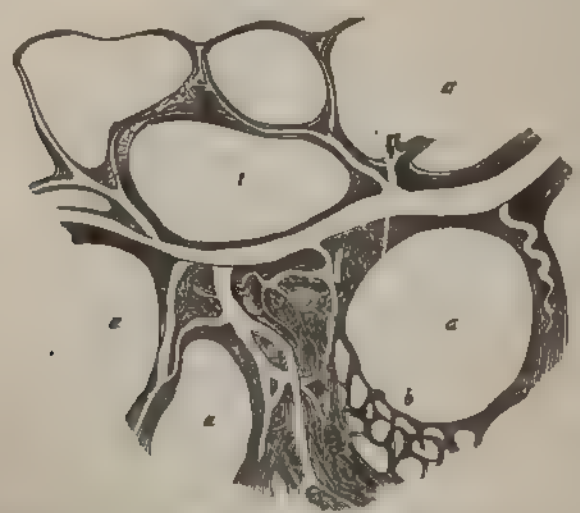


Fig. 307. A magnified portion of Lung affected by Emphysema. *a.* Greatly dilated air-cells; *b.* Cells of natural size (Bennett).

EMPHYSEMA.

SYMPTOMS.—Weak cough; frothy or heavy yellow expectoration; shortness of breath on making any exertion; voice weak; complexion dusky or bluish; asthmatic attacks; weak pulse, digestion slow; bowels constipated; chest barrel-shaped; slight chest movement in breathing; symptoms of bronchitis.

Pulmonary emphysema consists in an enlargement of the air-cells. In consequence of the abnormal thinning of the walls of the cells, many capillary vessels become atrophied, so that the blood is not suf-

ficiently aerated, and the system receives an insufficient supply of oxygen. This difficulty is greatly increased by the inability of the lungs to empty themselves, a portion of the impure air charged with carbonic acid gas remaining in the dilated cells, thus preventing the proper purification of the blood. It is the accumulation of this poison in the blood that occasions the blueness of the skin of the face and other parts. The obstruction to the circulation of blood through the lungs occasions congestion of the stomach, liver, and other abdominal organs. Hemorrhoids result in some cases. Out of these remote effects of the affection grow many of the most serious results which accompany its long continuance. The condition of the lungs in this disease is shown in Fig. 307.

The causes of emphysema are pleurisy, producing adhesions; chronic bronchial catarrh, or bronchitis; violent coughing, as in whooping-cough and dry bronchial catarrh; lifting heavy weights; playing upon wind instruments in an injudicious manner, and similar causes.

Treatment.—If the disease is the result of, or is accompanied by, bronchial catarrh, this must receive such treatment as has been already

Fig. 308. Dobell's Residual Air-Pump, for use in Emphysema.

prescribed for that disease. The patient must avoid exposure to cold. A uniform temperature is very necessary, as emphysematous patients take cold very easily. Flannel should be worn constantly. Warm packs, water and vapor baths are of great utility. Massage and inunction are also very useful remedies. To relieve the asthma which accompanies this disease, the use of the pneumatic apparatus is of greatest service. (See Fig. 217.) This is also the most serviceable of all means of treatment for effecting a radical cure in the few cases in which this can be accomplished. By causing the patient to breathe into rarefied air, the distended air-cells can be emptied of their contents, and somewhat contracted. By a continued daily use of this remedy, more has been accomplished than by any other means. This

treatment is employed very extensively in France and Germany, and has lately been introduced into this country. Some months ago we had an apparatus constructed for the purpose of administering the pneumatic treatment, and the results obtained have been thus far very satisfactory. In Fig. 308 is shown a form of respirator so constructed that the same effect obtained by exhalation into rarefied air with the pneumatic apparatus can be obtained in very small degree. Patients suffering with emphysema should avoid coughing as much as possible, as it aggravates the disease. They should also wear some form of respirator whenever exposed to cool air. See Fig. 309. The diet is of great importance. All kinds of food which have a tendency to form gas (See flatulent dyspepsia pp. 933, 939) must be carefully avoided. Fats, sugar, and everything clogging to the liver must be carefully avoided also. Most patients will be decidedly benefited by restriction to two meals a day.

Fig. 309. Respirator.

COLLAPSE OF LUNGS.

SYMPTOMS.—Shallow breathing; shortness of breath; blueness of the countenance, due to deficient aeration of the blood; in chronic cases the pulse becomes small, complexion pale, urine scanty.

Most frequent in newly born children. In adults is most often the result of capillary bronchitis, measles, disease of the heart, dropsy of the chest or abdomen, air in the chest or pneumo-thorax, and narrowing of the chest by deformities of the spine. Compression of the lungs, causing collapse, is the cause of shortness of breath in hunchbacks and the usual early death of such persons.

Treatment.—With the exception of cases of very young children, this affection can be intelligently managed only by treating the disease of which it is the result. The treatment required in most cases is the same as that recommended for capillary bronchitis. In cases of compression from dropsy, tapping, or removal of the fluid by aspiration, is generally required. The treatment of collapse of the lungs in infants is described in the section on diseases of children.

CONGESTION OF THE LUNGS.

SYMPTOMS.—Fullness or constriction of the chest; shortness of breath; dry, hacking cough, sometimes accompanied with frothy expectoration, occasionally streaked with blood; in severe cases, great difficulty in breathing; very rapid respiratory efforts, choking sensation, cough, with copious expectoration of bloody, frothy sputum; face red at first, grows paler as patient becomes exhausted, drowsy, and finally dies, if not relieved. In passive congestion, greater shortness of breath, especially on exercising.

This is a very common affection, though not often recognized as a distinct disease. Mild cases are considered—and correctly in many cases—to be incipient consumption, and severe ones are called pulmonary apoplexy. There are two forms of the disease: 1. Active congestion, in which too much blood circulates through the lungs, and 2. Passive congestion, in which there is too much blood retained in the lungs from some obstruction to the pulmonary circulation. The symptoms of the two diseases are very similar, it being sometimes impossible to distinguish between them in an individual case, except by observing the causes and inducing circumstances.

Causes.—The causes of active congestion are as follows: 1. Increased action of the heart, most often noticed in young persons, particularly about the age of puberty, and in narrow chested young persons troubled with palpitation of the heart. This may be induced by excessive exercise, the use of tea, coffee, alcoholic drinks, smoking, and great mental excitement of any sort, as from rage, delirium, etc. There is good reason for believing that this condition in young persons leads to pulmonary consumption when not corrected. It may often be considered, indeed, as the incipient stage of that disease. 2. Exposure of the lungs to cold air. 3. Rarefying of the air in the lungs, as in croup. 4. Disease which disables some part of the lungs, as pneumonia or pneumo-thorax. The chief causes of passive congestion are, 1. Organic disease of the heart, particularly disease affecting the valves of the left side. 2. Feebleness of the heart from general debility, fever, fatty degeneration, or any other cause. This form is very likely to occur in cases of protracted fever when the patient lies long upon the back, from settling of the blood in the lower part of the lungs.

Treatment.—Forbid all kinds of foods and drinks of a stimulating character, especially in that form of active congestion seen in narrow-chested young persons, and which is very likely to result in consumption. Tea, coffee and hot drinks of all kinds, as well as all kinds of alcoholic drinks, stimulating condiments, flesh diet, and indeed, everything of an

exciting nature must be strictly avoided. The diet should consist chiefly of fruits and grains. Milk may be used freely in place of meat and eggs. The "grape cure" practiced at Meran on Lake Geneva in Switzerland, is wonderfully successful. The patient lives on grapes, eating several pounds a day. The milk and whey cure are also practiced successfully in these cases. In the cases of violent congestion usually termed pulmonary apoplexy, the usual remedy is bleeding. We have treated a number of cases of this disease without this measure, however, and with such excellent results as warrant the assertion that it is not required. In one case in which the patient expected to die any moment, and was expectorating large quantities of bloody, frothy sputum, the heart beating very violently, almost instantaneous relief was obtained by the use of faradization, the positive pole being applied at the base of the brain and the negative over the lungs. The same patient was relieved in a similar manner in several subsequent attacks. In other cases, the warm full bath has been equally effective, relieving the lungs by attracting the blood to the surface. To prevent congestion arising from long illness with confinement in bed, change the position of the patient often, and thus prevent settling of the blood in dependent parts of the lungs. In congestion arising from pneumonia or other disease of the opposite lung, relief will be obtained only by cure of the primary disease. Fortunately, the same remedies that relieve the one, also affect favorably the other. Bleeding, especially in such cases as these, is an almost fatal mistake, since it will only temporarily relieve the urgent symptoms, and will certainly aggravate the main disease. The same remark applies with still greater force to congestion arising from disease of the heart. In these cases, great care should be taken to warm the extremities and in every possible way promote the circulation in the surface. Fomentations to the chest, applied as hot as can be borne for a short time, and ice-compresses between the shoulders, is an excellent measure which almost always gives relief. If amelioration of the symptoms is not otherwise obtained, we may relieve the lungs by the use of Junod's boot; or, in the absence of this, by tying a ligature around one or both limbs near the body with sufficient tightness to obstruct the venous circulation and cause an accumulation of blood in the limbs. This measure is really equivalent to the abstraction of a considerable quantity of blood, without the dangers of the latter measure. The ligatures should not be kept in place so long as to injure the ligated parts, and should be gradually loosened as soon as the lungs are relieved.

HEMORRHAGE OF THE LUNGS.—HÆMOPTYSIS.

SYMPTOMS.—Blood frothy and coughed up in mouthfuls; blood mingled with phlegm or mucus; blood bright red and fluid, no clots.

The following comparative table of symptoms shows very clearly the difference between hemorrhage from the lungs and bleeding from the stomach, conditions which are often confounded:—

BLEEDING FROM THE LUNGS.	BLEEDING FROM THE STOMACH.
Difficult breathing.	Nausea.
Pain or heat in the chest.	Tenderness at pit of stomach.
Blood frothy.	Blood not frothy.
Blood of bright red color.	Blood of dark color.
Blood mingled with phlegm.	Blood mixed with food.
No clots.	Clots always present.
Blood coughed up in mouthfuls.	Blood vomited freely.
Symptoms relating to the chest.	Symptoms relating to the stomach.

The chief causes of hemorrhage from the lungs are congestion of the lungs, or disease which weakens the walls of the small blood-vessels. Undoubtedly the latter cause is the most common one. Pulmonary hemorrhage occurs most frequently in persons suffering with consumption, either in its incipient or its advanced stages. Bleeding at the lungs must not, however, be taken as positive evidence of the existence of tubercular disease, since many cases are observed in which even a severe hemorrhage from the lungs is not followed by any other symptoms of disease of the lungs, the patient enjoying perfect health for many years. There is good evidence for believing that hemorrhage from the lungs is a cause of consumption, the retained blood giving rise to inflammation, which is followed by breaking down of the lung. Hemorrhage of the lungs occurs with considerable frequency in persons of a scrofulous or tuberculous tendency who seem to be in perfect health; in these cases it is justly regarded as a very ominous indication, and one which demands prompt and vigorous attention.

The bleeding generally occurs from the rupture of a capillary vessel in the mucous membrane of the bronchial tubes, but occasionally in the deeper tissues of the lungs. Death from hemorrhage occurs much more rarely than is generally supposed, even in cases of severe tubercular disease. In fact, some eminent physicians maintain that consumptive patients who have occasional hemorrhages succumb to the disease less rap-

idly than those who do not suffer with hemorrhage at all. Many consumptives express themselves as feeling relieved after a slight hemorrhage, probably owing to the temporary relief of congestion. In cases in which there is very profuse hemorrhage which cannot be controlled by treatment, the bleeding is usually caused by the rupture of a vessel of large size. The expectoration of small quantities of blood, in the form of small streaks or specks in mucus or phlegm, is a symptom of little or no importance. In these cases the source of the slight bleeding is generally in the throat. In some cases, clots of blood collect in the throat at night from slight hemorrhage from the nose.

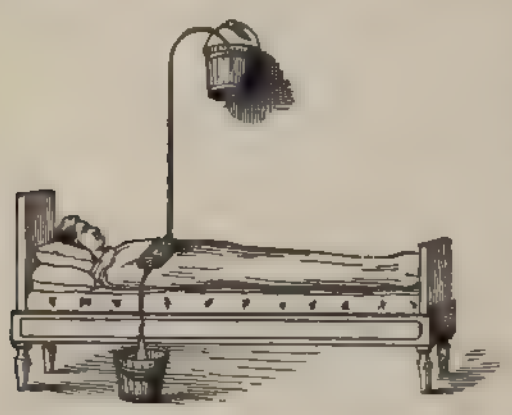


Fig. 310. Applying cold to chest for hemorrhage of lungs.

Treatment.—Rest in bed with the head and shoulders elevated. Mental and physical quiet. Restrain cough as much as possible, as it greatly aggravates the hemorrhage. Give patient iced-water to drink and small bits of ice to swallow. Apply ice compresses over chest, and every fifteen minutes make hot applications between the shoulders by means of hot bricks, fomentations, or hot bags. Take care to keep the trunk and limbs dry, and apply heat to the extremities. Frozen compresses may be applied thus: Mix, in an ordinary large milk-pan, equal parts of pounded ice and salt at least two inches deep. Mix quickly and cover. Place the pan upon a compress of cotton or linen of four or five thicknesses wrung out of iced-water as dry as possible. In a few seconds the compress will be frozen. Apply at once, and cover with a dry flannel. A good means of applying continuous cold is by means of the syphon syringe, as shown in Fig. 310. The upper vessel is filled with water containing two or three pounds of salt to the gallon, and a quantity of ice. The current of the ice-cold mixture is started by means of the tabs upon the sides of the bag, the stop-cock on the lower tube being closed. When the bag is sufficiently full, the stop-cock is opened sufficiently to allow the fluid in the bag to pass out at the same rate that it

runs in When the water has nearly run out of the upper vessel, that which has run into the lower vessel should be put into the upper one and a new supply of ice, or ice and salt, added. By this means an intense degree of cold may be kept up for hours without wetting the patient or giving him any inconvenience whatever. Good results are also obtained by employing cold enemas. The temperature should be as low as the patient will bear. It is customary to add a little vinegar to the rectal injections, though we think the addition is unnecessary. Common salt is a remedy popularly reputed to be of value in these cases. The usual dose is a teaspoonful of finely-powdered salt taken dry. The most useful internal remedy, however, is the inhalation of a solution of alum or tannin. The proportion should be 5–10 grs. to the ounce of water, and the solution should be inhaled by means of an atomizer. Junod's boot (Fig. 219) and ligation of the limbs are remedies of value in hemorrhage from the lungs as well as in congestion. The diet should be the same as directed for congestion, meat, stimulants, hot drinks, and stimulating condiments being carefully avoided. Little food should be taken during the attack, and for a day or two after. The patient's mind should be quieted by the assurance that, in all probability, he will recover, and it may even be suggested to him that the effect of the hemorrhage may be beneficial. We have never failed to relieve cases of hemorrhage by the employment of this plan of treatment.

PULMONARY APOPLEXY.

***SYMPTOMS.**—Violent hemorrhage from the lungs; or suffocation, due to filling of the lungs with blood; or sudden death from internal hemorrhage. In less severe cases the chief symptoms are sudden difficulty in breathing; cough with expectoration tinged with blood; symptoms of pneumonia or pleurisy; in cases of heart disease, sudden irregularity of the pulse.*

This serious affection is the result of the obstruction of a blood-vessel in the lungs, which may arise in consequence of disease of the heart or some other affection which gives rise to clots or small portions of tissue in the circulation. The disease is somewhat obscure, and is sometimes difficult of detection. It is easily mistaken for pneumonia, of which it is sometimes the cause.

Treatment.—Elevate the head and shoulders of the patient. Apply warmth to the extremities. If there is much bleeding, employ the remedies recommended for hemorrhage from the lungs. If the case is a severe one, so that the blood flows faster than it can be expectorated, it will of course prove speedily fatal.

INFLAMMATION OF THE LUNGS.—PNEUMONIA.

There are three forms of pneumonia, *croupous*, *catarrhal*, and *chronic*. We will first call attention to

CROUPOUS PNEUMONIA.

SYMPTOMS.—Marked chill, followed by fever which rises often very high, even on first day; headache; shortness of breath, patient breathing thirty to fifty times a minute instead of sixteen to twenty times; pain in chest, at the seat of the disease, of a piercing or stabbing character; short, ringing cough; expectoration of rust-colored mucus, which is very tough and tenacious; careful examination of sputa shows casts of small tubes; pulse rapid, ninety to one hundred and fifty; sometimes jaundice; redness of cheek upon the affected side; eruption upon the lips; crackling sound heard upon placing ear to affected side.

The above-named symptoms generally follow one another in succession, with exception of the high pulse, which is present all through the disease. They are sometimes separated into three groups, known as the three stages of the disease. 1. *Engorgement.* In this stage the affected part of the lung is intensely congested with blood, and the air-passages contain a viscid mucus which glues together the walls of the small bronchial tubes, producing a crackling sound when the patient takes a deep breath, which can be easily heard by listening at the point of pain. The latter symptom is always present in this stage, except in very old persons, in whom it is sometimes absent. It is similar to the pain of pleurisy, which is also present at this stage, the covering of the affected portion of the lung participating in the inflammation. 2. *Hepatization.* In this stage the air-cells are filled with a tenacious exudation, which causes the chest to lose its natural resonance. When percussed, the sound obtained is flat or dull. 3. *Resolution or purulent infiltration.* At this stage, the matter in the air-cells is usually liquefied and absorbed—not expectorated as many suppose. In case absorption does not occur, suppuration sometimes takes place, often extending to the lung, even forming cavities of greater or lesser size. In other cases, the lung remains solidified, and the patient suffers with chronic pneumonia, or consumption.

Pneumonia sometimes occurs as a complication of typhoid fever and other acute diseases. It is also sometimes attended by acute catarrh of the stomach and bowels. It is not a very fatal disease in young and healthy subjects, but in weak children, in old persons, and in habitual drinkers, it is a very fatal malady.

Causes.—The exciting causes of the disease are not well understood. It is generally attributed to "taking cold;" but there is some doubt whether this is an important cause of the disease. From an extended study of the subject, Dr. H. B. Baker, Secretary of the State Board of Health of Michigan, has ascertained that pneumonia is most frequent when the temperature and amount of moisture in the air is low, and the amount and force of wind and the proportion of ozone is high. This conclusion he has reached by a comparison of the weekly reports of diseases made to the Board of Health, by its numerous correspondents, with the daily records of the various meteorological observers in various parts of the State. While this kind of investigation is still in its infancy, the results which have already been obtained are exceedingly interesting, and may probably be considered as reliable. Pneumonia occurs at all periods of life, but is most frequent in males and in aged and feeble persons.

Treatment.—The old-fashioned routine treatment of blood-letting, is now, fortunately, pretty much out of date. The study of the natural history of the disease has recently shown that the great majority of cases of this disease recover with no active treatment, or no treatment other than simple nursing. It has also been observed, and is acknowledged, that patients who are bled are, as a general rule, much less likely to live than those who are not bled, where bleeding is generally practiced. The greatest immediate danger in this disease is the depressing influence of the excessive heat upon the heart; hence in this, as in most other acute diseases characterized by high fever, the most important measures of treatment are those which will reduce the fever. Of these, the cool bath, the graduated bath, the sponge bath, the wet-sheet pack, and the cold enema are the most effective. Cool compresses alternated at intervals of two or three hours by hot fomentations for five or ten minutes should be applied to the chest, particularly to the affected side, the seat of pain. The hot fomentations relieve the pain, and the cold compresses check the diseased process. The compresses should be wrung out of cold water and changed every five to eight minutes, or as often as they become warm. Although the cool compresses are not usually liked by the patient, they will soon give relief if their use is continued, and they do much toward shortening the course of the disease. Care should be taken to keep the patient's body from being wet except where the treatment is applied. The cold compress is much used in the large hospitals of Ger-

many. In the great hospital at Prague, it is considered the main reliance in the treatment of this grave malady. We have used it in conjunction with other measures of treatment in many cases with marked success. When the pulse becomes as rapid as ninety-five to one hundred and ten, or more, cool sponging, the wet-sheet pack, the cool full bath, or the cool enema should be employed. In ordinary cases any one of the first three measures mentioned is usually sufficient, if repeated with proper frequency. When much chilliness is produced by the contact of water with the skin, the cold enema is a most admirably useful measure. It will control the high temperature when other measures fail to accomplish the desired result in many cases. The amount of water required is half a pint to a pint. The temperature may be forty to sixty degrees. The colder the water, and the larger the quantity employed, the greater and more prolonged will be the effect. We consider this one of the most important of all the recent advances in the use of water. Next in importance to the use of water in this disease, is the employment of fresh air. The apartment should be kept as cool as possible without discomfort, and an abundance of fresh air should be continually supplied. Drafts should be avoided; but it is better to have fresh air with drafts, than to sacrifice the pure air for fear of drafts. In case water cannot be applied, the patient may be exposed with the surface unprotected to the cooling effects of the air. It is even admissible to expose the wet surface of the body to the air, allowing the patient to be cooled by evaporation. The danger of taking cold in this disease is by no means so great as supposed. It is wholly unnecessary and is exceedingly harmful to cover the patient with many blankets under the mistaken notion that he must be kept at a sweltering heat to prevent him from having a relapse or an extension of the disease.

The diet of the patient should consist of milk, oatmeal gruel, ripe fruit, and similar easily digested food. No meat, eggs, or other stimulating food should be allowed.

The most active symptoms do not usually continue more than three or four days. Improvement then usually begins. This process may be greatly encouraged by the use of alternate hot and cold compresses applied three or four times a day. It is also well to have the patient wear a warm wet compress over the chest at night for the purpose of stimulating absorption.

CATARRHAL OR LOBULAR PNEUMONIA.

SYMPTOMS.—High fever; short, harsh, painful, hacking cough; other symptoms of croupous pneumonia; occurs most often in children as a complication of measles or whooping-cough.

This affection seldom occurs as a primary disease. It is most frequent subsequent to capillary bronchitis, the bronchitis of measles, and whooping-cough. When the peculiar cough of the latter disease is suddenly displaced by a short, hacking, painful cough, there is ground for suspecting this disease. The dullness present is found usually at the back, forming a narrow strip on each side of the spine, instead of being confined to the lung as in ordinary pneumonia.

Treatment.—The treatment of this affection is essentially the same as that already described for croupous pneumonia. Cool compresses to the chest are especially to be recommended as among the most useful measures. According to Bartels and Ziemssen, both very eminent German authorities, cool compresses are "by far the most efficient mode of treatment." In children, in whom the disease is by far most frequent, the wet-sheet pack and the blanket pack are very useful.

CHRONIC PNEUMONIA.

SYMPTOMS.—Cough; evidences of bronchial irritation; sinking in of the chest wall upon the affected side.

This is a rare disease. It occurs most often after pneumonia, and accompanies many cases of consumption, causing the well-known and very characteristic sinking in of the upper part of the chest wall, particularly just below the clavicle.

Treatment.—Nothing can be done to cure the disease itself, as it consists in a hardening and contraction of the tissues of the lung, which cannot be overcome by any known method of treatment. The best of all remedies is the inhalation of hot vapor of water by means of a steam inhaler. Either pure water may be used, or water to which ten drops of tincture of Benzoin to the ounce has been added.

CONSUMPTION.

SYMPTOMS.—Loss of appetite; emaciation; debility; malaise; frequent breathing; shortness of breath on slight exercise; pain in chest and shoulders; prickling, heat, and pain beneath the sternum; cough; hoarseness; expectoration of frothy mucus, rusty sputum, or mucus streaked with yellow; fever, highest in afternoon; chill or chilliness in morning or forenoon; night sweats; pointed nose, from emaciation, with motion of

nostrils at each breath; incurved nails; narrow chest, sunken beneath the collar bones; usually dullness of affected portion of lung when percussed; irregular or jerky respiration; rales and other abnormal sounds heard by examination with the ear; hemorrhage.

This is one of the most formidable of all the maladies from which the human family suffers, being the direct cause of more than one fifth of the deaths from all diseases combined. Notwithstanding the great interest which has always been taken in the study of this disease, it has not until recently been well understood, and even now presents many difficult problems. The symptoms above mentioned do not all occur in the same patient, as individual cases are seldom quite alike, but all belong to the disease, and any of them may occur in any case during the course of the disease. The disease usually begins insidiously, and progresses steadily to its termination, though not infrequently the patient will, at times, seem to improve very much, the disease seeming to be held in check. The rapidity of the progress of the disease depends much upon the temperament of the individual, his hereditary or acquired tendencies, and the particular conditions under which he is placed. The two sexes suffer with about equal frequency. The periods of life most subject to the disease are infancy to seven years, and twenty to thirty years of age.

Owing to the extreme frequency of the disease, we ought, perhaps, to sketch the progress of the malady with somewhat greater definiteness. Its cause, as remarked, is different in different individuals; but there are three principal types of the disease which may be definitely described. One patient has an attack of pneumonia; it may be of the ordinary croupous form, or it may be of the catarrhal variety. Instead of recovering in a few days as is usually the case, he does not regain his usual strength, and continues to suffer with a slight cough and some shortness of breath. By degrees the cough increases, all the other symptoms become more aggravated, and the affected lung begins to break down, as shown by the character of the expectoration, which becomes yellowish, or streaked with yellow, and when cavities have formed, is coughed up in round, grayish masses which preserve their form. After the cough becomes severe, hemorrhages are also likely to occur, which, if very frequent, rapidly exhaust the patient's strength, although death seldom results directly from the loss of blood.

Another patient takes a severe cold in the fall, from which he does not entirely recover before spring. The next fall he takes a more severe cold, which lasts well into the summer. The following winter he con-

tracts a still more obstinate catarrh of the bronchial tubes, from which he does not become entirely rid during the summer, and which is augmented by a fresh cold the following winter. Thus the disease which was at first a simple acute catarrh, becomes chronic catarrh, and soon, by extension into the small bronchial tubes and air-cells, real consumption is occasioned. The cough continues, the fever rises, the expectoration becomes more abundant and purulent, the appetite fails, emaciation comes on, hemorrhage occurs, and the patient rapidly declines.

Still another patient has neither cough nor expectoration at the start, simply feeling weak and "good for nothing," gradually losing strength and flesh. Perhaps he is first startled about his condition by a hemorrhage from the lungs. Soon cough and frothy expectoration begin, and the patient fails rapidly. This is a case of primary tuberculosis. Less than an hour ago we examined two cases of pulmonary disease, one that of a man in the prime of life, the other that of a young lady, both of which gave essentially the above history.

The disease is sometimes divided into stages; but as it is impossible to discriminate closely between the three stages described, the classification is of no practical value. The disease begins with a consolidation of the lung tissue, a catarrh of the smallest bronchial tubes, or deposit of tubercles. After a time, there is a breaking down of the lung tissue from the destructive changes which occur in consequence of the morbid process, and cavities are formed. The matter expectorated, if examined under a microscope, shows the presence of portions of lung tissue. It is possible, by physical examination, to determine whether or not a cavity is present. The course and progress of these destructive changes are exactly indicated by the intensity of the fever. When it rises high, the disease progresses rapidly, and when it is checked the disease is controlled. In some cases the destructive process is prolonged through years. In others, it is completed in a few weeks or months.

Causes.—The following may be mentioned as the most clearly traceable causes of consumption :—

1. *Impure Air.*—The health of the lungs depends more upon purity of the atmosphere than upon any other cause. There are numerous impurities to which the air is subject, but the most potent of them all in the production of consumption is what is known as the organic matter of the breath. This is always present in air which has been contaminated by the products of respiration, hence is found in abundance in the air of churches, lecture halls, school rooms, and other places where large

numbers of people congregate, as well as in most dwelling houses during the cold season of the year, when dwellings and other buildings are very seldom sufficiently ventilated. Some of our most eminent sanitary authorities assert that this organic matter is the most important of all the causes of consumption. The inhalation of dust is another active cause, the effect being to produce local irritation which gradually increases and extends more and more deeply into the air-tubes until the air-cells become involved. This cause is particularly active upon those engaged in the trades of stone-cutting, file-grinding, wool-carding, cigar-making, and other dusty occupations.

2. *Improper Diet.*—Errors in diet, particularly the use of food of an innutritious character or deficient in the elements of nutrition, and an insufficient supply of food, are very productive of conditions of the system which in the highest degree favor the occurrence of consumption. Young ladies who attempt to live on bread and butter and pickles, and older ones who make white bread and strong tea their staple articles of diet, are the favorite victims of this disease. The idea has been advanced that the use of an exclusively vegetable diet is productive of consumption, but no substantial evidence has been presented in favor of this view, and it can be clearly shown by irrefragable evidence that this is not the case. Indeed we have seen persons recover from the disease in its third stage when subsisting upon an almost exclusively vegetable diet. Vegetable food will sustain life well under all conditions, in health as well as disease, provided it is well digested and thus made into pure and healthy blood.

3. *"Taking Cold."*—A large number of those who suffer with this disease date the beginning of their disease from "taking cold" at some time. This cause is seldom looked upon with that degree of seriousness which it really deserves. A cold is thought to be so trivial that it hardly requires medical attention at all, and thus many acute catarrhs which are in themselves trivial, lay the foundation for this more formidable malady. A cold should never be neglected. Drinking large draughts of cold water when the body is overheated by exercise has been pointed out by some as a cause of consumption, and there are reasons for believing that this may be the case. The practice is certainly a very pernicious one, often occasioning a great shock to the system, fully as much as is produced by exposure of the surface of the body to cold air.

4. *Tight Lacing.*—This absurd and not yet obsolete custom has contributed a large proportion of the victims to this disease. By

constriction of the chest, some portions of the lungs are rendered inactive, and these inactive parts are thus rendered unnaturally liable to this disease.

5. *Contagium.*—Another most important cause of this terrible malady is contagium. Within a few years it has been shown beyond chance for reasonable doubt that consumption is a communicable disease. It has been proven that the disease may be communicated through eating the flesh of tuberculous animals, and also by the use of the milk of consumptive cows. Furthermore, there is strong evidence that the disease may be communicated through respiration by breathing infectious particles exhaled by a consumptive person or animal. The danger is of course the more imminent the more closely confined the healthy person may be with the individual suffering with the disease, and the less attention is paid to ventilation. Numerous cases might be cited in which a kind relative or an attentive nurse has very closely followed a friend to a consumptive's grave. The probability is very strong that contagion, especially through the medium of consumptive animals, is really one of the most widely acting and active causes of this terrible malady.

The English medical journals are devoting considerable attention to the subject of consumption in cows and other animals. The *British Medical Journal* calls attention to the late report of Mr. Law, of Cornell University, to the National Board of Health, quoting from the report as follows:—

"Phthisical cows are often eaten without causing obvious disease in the consumers. I have known large dairies of tuberculous cows in the hands of vigorous and healthy looking owners, who consumed the milk freely. It may be freely concluded that a large number of individuals while in the enjoyment of robust health will withstand the influence of tubercle taken in by the stomach; but it must be otherwise with the weak and young, those with poor feeding and worse air, those living in damp, sunless localities, and subjected to much exposure. In a case that recently came under my notice in Brooklyn, N. Y., a family cow was found in an advanced state of tuberculosis, and the owner and his wife were evidently rapidly sinking under the same malady. In another case reported to me, a family cow, supposed to be suffering from lung-plague, was found to be afflicted with tuberculosis instead, and the owner's wife (a consumptive), who had been making free use of the milk, warm from the cow, was persuaded to give it up, and underwent an immediate and decided

improvement. It is for infants and adults who are somewhat infirm or out of health, or whose surroundings are not of the most salubrious kind, that the danger is greatest; but this embraces such an extended class that the moral interests involved are almost illimitable. The destruction of infancy and wasting of manhood from this cause is unquestionably far greater than has hitherto been realized."

Notwithstanding the opinion of Prof. Law that the milk and flesh of consumptive cows *may* be eaten by robust persons without injury, it is evident that there is at least a possibility that even the well may be affected, and where there is a hereditary tendency to consumption, the possibility will undoubtedly become a probability. Again, while a person might successfully resist the infection when in health, a sudden temporary indisposition, even that from a simple cold, might be sufficient to make him susceptible to, and entail upon him, a fatal malady. We agree with Mr. Law in thinking that this danger is far greater than is generally realized, and the present prospect is that the danger will increase rather than diminish.

6. *Sexual Excesses.*—Self-abuse and excessive venery are undoubtedly most powerful acting causes of pulmonary consumption. The enervating effects of these vices are felt by every organ in the body and not more by any other organ than by the lungs. We have seen many cases of consumption among young persons in which the disease could be directly traced to secret vice; and in a number of instances we have met cases in which the evidence was too strong to be mistaken that excessive sexual indulgence with the opposite sex was the real foundation of the disease. This should be borne in mind by persons suffering with this affection, as in many cases the sexual desires are not abated even though the disease may have reached an advanced stage, although their gratification is in the highest degree detrimental to the prospects of recovery.

7. *Foreign Bodies.*—Certain trades, such as stone-cutting, file-grinding, wool-carding, cigar-making, manufacturing of hats, and other occupations productive of much dust, which the workmen are obliged to inhale, are exceedingly productive of disease of the lungs. The fine particles which are received into the lungs produce, first, simply a slight irritation which results in congestion, and finally settled catarrh, which, gradually working down into the fine air-tubes of the lungs, at last involves the air-cells and gives rise to morbid processes the final result of which is consumption. We have met a num-

ber of cases in which the disease originated in this way. Fig. 311 illustrates the microscopical appearance of a small portion of the lung of a person who died of consumption which resulted from the inhalation of charcoal dust.

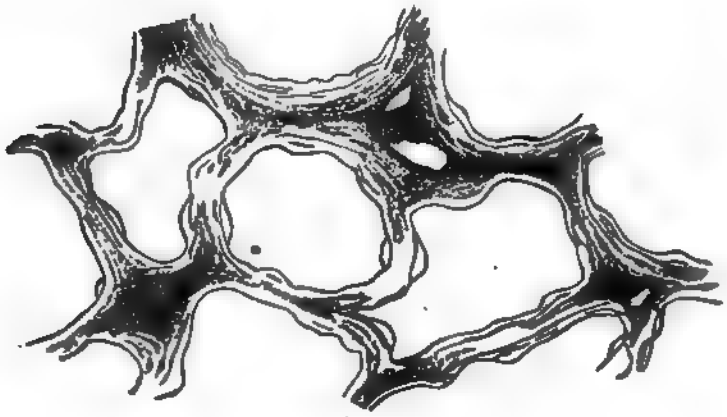


Fig. 311.

It will be observed that the lung tissues are so completely filled with the fine particles of charcoal that the lung has become almost as black as the charcoal itself. In cases in which persons have become consumptive by the inhalation of fine particles of stone while working at the trade of stone-cutting, the lung frequently contains so large a quantity of stony particles as to have a gritty feeling, and resist the edge of a knife. The deposits of blood in the lungs are the result of hemorrhage, another cause which should be mentioned. It is generally supposed that hemorrhage from the lungs is positive proof of the existence of consumption. This is a mistake, however, as it not infrequently happens that the hemorrhage is itself the cause of the disease rather than the result; portions of blood left in the lungs undergo a kind of degeneration, which soon results in the formation of tubercles, and finally in the breaking down of the lungs and the formation of cavities.

8. *Various Diseases.*—From the examination and study of several hundred cases of lung disease within the last ten years, we have become satisfied that consumption is a primary disease in but a small proportion of cases. In a majority of consumptive persons whom we have met, history has showed very clearly that the system was first

weakened and debilitated by some other affection before the pulmonary difficulty manifested itself. We have become fully convinced that dyspepsia is a very common cause of consumption. Through impairment of the digestion, the blood becomes of poor quality, the patient loses flesh and strength, and his power to resist the causes of disease becomes so susceptible that slight things which in health would not have affected him at all are sufficient to lay the foundation for a fatal malady. A great majority of persons who suffer from chronic diabetes finally die of consumption. This is also a very common termination for the wretched and misspent lives of syphilitic patients. Typhoid fever, measles, whooping-cough, chlorosis, intermittent and other malarial fevers, and other affections which merely debilitate the system, frequently terminate in consumption.

9. *Alcoholic Drinks.*—Dr. Richardson has recently shown that the use of alcohol not only predisposes an individual to consumption but that it entails upon him liability to a peculiar form of the disease which is the direct result of alcoholic poisoning. This is particularly true of persons who use liquors to an immoderate degree, but it is also true of moderate drinkers as well. The facts demonstrated by Dr. Richardson furnish an unanswerable objection to the employment of alcoholic drinks as a preventive of consumption, for which it has been so highly recommended by many physicians. It also clearly interdicts its use as a curative remedy.

10. *Tobacco.*—It is well known that the use of tobacco is exceedingly productive of catarrh of the nose and throat, which fact alone is sufficient to condemn its use, if it were impossible to show that its deleterious effects upon the respiratory organs extended no farther than the organs mentioned, since it is well known that catarrh of the throat very frequently extends by slow degrees into the larger and then to the smaller bronchial tubes, finally setting in operation the degenerating changes and processes which result in the destruction of the lungs.

11. *Depressing Mental Influences.*—Long-continued grief, fear anxiety, disappointment, together with other depressing mental influences, often result in the production of conditions of the system which render the individual thus suffering open to the inroads of pulmonary disease. The recognition of this fact ought to lead every individual who is from any cause so situated as to be subject to depress-

ing influence to contend strongly against such influence rather than to give way to their emotions and allow themselves to become the prey of circumstances. Causes of this kind can be contended against as successfully as those of any other sort. The depression arising from too close confinement to mental labor, especially when it is of a very taxing or onerous character, operates in the same way as depressing influences of any other sort.

12. *Heredity.*—It is very rare that the disease itself is inherited. The unfortunate inheritance is simply a tendency to the disease, or a susceptibility of constitution which increases an individual's liability to the affection. There is no doubt that it is entirely possible for the individual whose family is consumptive in a marked degree, and whose inherited tendency is unmistakable, to so regulate his course of life as to overcome the tendency, at least in a very large degree, and to so fortify his constitution against this malady as to prolong his life to the natural limit of human longevity.

13. *Prolonged Nursing* is another cause of pulmonary disease to which attention should be called. Many mothers have survived the risks and sufferings of child-birth only to die victim to the long-continued drain upon their system arising from prolonging the period of lactation beyond its natural limit. Healthy mothers with robust constitutions may do this with impunity; but a weakly woman who has given birth to several children in rapid succession, and whose constitution has been materially weakened by the excessive demands upon her sexual and nutritive forces, even perils her own life by the maintenance of that of her child. We do not wish to give any countenance to the evil practice becoming so common, especially in large cities, of employing wet nurses for the simple purpose of relieving mothers of the inconvenience of nursing and caring for their own off-spring, when they are well able and qualified by nature to do so; but it often becomes the duty of the observing physician to urge upon a weakly mother the discontinuance of nursing as the only means of safety to her own life and possibly also of her child, to whom the insidious pulmonary disease might be imparted through the medium of mother's milk.

14. *Climate.*—Much has been said about the influence of climate as a cause of consumption; but we think that much more has been charged to climate than is really just. The opinion prevails that the inhabitants of cold climates are particularly subject to diseases of the

lungs, especially to tuberculosis; but it has within a few years been clearly shown by careful observation that dwellers in cold climates are no more subject to the disease than the inhabitants of the tropical regions. In fact, some nations living at the extreme north are almost wholly exempt from the malady which is the greatest bane of the race in temperate climates. The truth in regard to this matter seems to be that consumption is most prevalent in countries in which the climate is changeable, being subject to sudden and rapid alternations of heat and cold. Either steady cold or moderate, continuous heat are much more favorable to health of the lungs than alternations of temperature.

Treatment.—The first and most important measures of treatment are those which contemplate the prevention of the malady. These consist first, of a careful avoidance of all the known causes of the disease; and second, of the most strenuous efforts to counteract any known tendency to it through heredity. The infants of consumptive mothers should not be allowed to nurse unless a healthy wet nurse is employed. Children with a scrofulous or consumptive tendency should be kept in school but little, and should be given every opportunity for physical development. When grown to adult age such persons should not engage in any occupation which is known to favor lung disease, but should make all their habits and conditions, so far as possible, tend toward the one object of contending against their hereditary tendency. In the treatment of the disease when it has developed sufficiently to be recognized, it is important that prompt and vigorous measures should be employed at once. The greater portion of the sufferers from this disease sacrifice their only hope for life by delay and procrastination. If the disease has obtained even the slightest foot-hold, there is no time to be lost. The principal indications to be met are; 1. To check the fever; 2. To improve the patient's nutrition; 3. To arrest the night sweats; 4. To alleviate the cough; 5. To develop the lungs; 6. To sustain and invigorate the patient in every way possible. The best means to be employed for the above purposes, according to the results which we have obtained in the treatment of hundreds of cases of this disease, are the following:—

1. *To Check the Fever.*—If possible, prevent the chill which almost always precedes the fever, by keeping the patient in bed until an hour or two after the usual time for chilling is past, placing warm jugs or bricks at his feet, so as to keep him warm, but taking care not to induce perspiration if it can be avoided. When the patient suffers

with no well-defined chill, but has wandering and irregular sensations of chilliness, this plan cannot be adopted; but the patient should remain quiet in bed during the early part of the day, and if the fever runs very high, it will be better for him to remain quiet in bed for several days in succession, provided, of course, that he can have other proper treatment at the same time. By this means the patient's vitality and strength will be economized; but he must not be confined in bed for a long period, as he needs the advantages of out-of-door air and exercise. As soon as the fever is materially lessened, let him resume his daily walks and rides in the open air. Copious water drinking, at least to the amount of three to six glasses of water a day, is another means by which the fever may be successfully lowered. The employment of sponge baths at the time when the fever is highest, is a means of great comfort to the patient. Either pure water or water containing one-third its measure of alcohol may be employed in sponging the patient. Inunction on the dry, parched skin, after moistening it by a wet-hand rub, is another measure not to be forgotten. When the patient is strong and does not suffer with night sweats, a wet compress worn about the chest often affords very great relief from the parching fever.

2. *To Improve the Patient's Nutrition.*—As defective nutrition is one of the principal causes of consumption, the improvement of the patient's nutrition is one of the most essential features of the treatment of this disease. In order to accomplish this, attention must first be given to improvement of the digestion. If the patient is suffering with any of the various forms of dyspepsia, he must receive such treatment for the same as has been already described in the section on "Diseases of the Digestive Organs." This is a matter of very great importance, though it is often overlooked, the supposition being that the stomach disorder depends upon the disease of the lungs rather than the contrary, which is really the case. The diet of the patient should first consist of such food as he can best digest. In many cases, milk and eggs with well-cooked grains and a small allowance of fruit, constitute the dietary best adapted to the condition of both the lungs and the stomach. Dr. Salisbury, of Cleveland, who has a peculiar theory regarding consumption, believing that it originates from the products of fermentation in the stomach, requires his patients to abstain from the use of fruit and sweet and starchy foods altogether, and to depend almost exclusively upon lean meat with a very small allowance of bread. He

requires his patients to take several pounds of beef steak or other lean meat daily. He claims very extraordinary results from his plan of treatment. His plan differs from that which we have followed for a number of years in but the one particular of diet. We have never thought it necessary to confine patients to an exclusively nitrogenous diet, and believe there are several evils which may arise from this course, which are perhaps as great as those growing out of the disease itself. We have also obtained by our plan results as remarkable as any claimed by Dr. Salisbury. We shall have to receive considerable more evidence than has yet been produced to convince us of the necessity of depriving consumptive patients of fruits and grains, and confining them wholly to flesh diet. The daily employment of massage, and inunction at least two or three times a week, together with daily sponging with salt water, are excellent means for stimulating nutrition. To these measures should be added, when possible, a sun bath daily from half an hour to two hours in length, according to the patient's strength and the frequent use of electricity in the form of general faradization.

3. *To Arrest Night Sweats.*—The exhausting sweats from which many patient's suffer, particularly at night, or at any time when asleep, should be checked as speedily as possible. The best means of accomplishing this are the use of the salt sponge bath at night; sponging the body with a mixture of alcohol and water in proportion to one part of the former to two of the later; and sponging with hot water at bedtime. The last remedy we have employed very frequently of late, and are much pleased with the results afforded by it in the prevention of these exhausting sweats. It is important that patients suffering in this way should know that the sweats are greatly aggravated by opium in any form, and hence are increased by cough mixtures of any sort which contain this drug.

4. *To Alleviate the Cough.*—This troublesome symptom is often one of the chief sources of weakness and increasing debility, since it deprives the patient of his necessary rest at night and excites him with continued and harassing efforts to relieve the unpleasant sensations by which it is provoked. Not infrequently the cough is produced, not by the condition of the lungs themselves, but by some form of irritation in the throat. This chronic irritation of the larynx is not infrequently itself produced by elongation of the palate The cause of the cough should always be sought for, as it not infrequently happens that much

annoyance and waste of strength will thus be saved. If the difficulty is chiefly in the throat, it will be readily relieved by soothing gargles and other treatment, such as has been described for inflammation or chronic catarrh in this location. Very simple remedies are often effective to relieve the most distressing cough, such as gargling of water in the throat, holding pieces of ice in the mouth, taking occasional sips of strong lemonade, and similar remedies. The best of all means of allaying the irritation of the throat we have ever found is the inhaler which has already been described. (See Fig. 274.) Another measure for the relief of cough is the application of fomentations to the chest and between the shoulders. These applications should not be given more than once or twice a day. The time of each application should not extend over fifteen or twenty minutes. If the patient perspires easily, great care will be necessary to prevent weakening him by exciting perspiration by fomentations. In this case the application to the chest of dry heat by means of the hot-water bag is better than the use of fomentations. A tepid compress applied to the chest at night will frequently relieve the harassing night cough. The application should be made with a soft woolen cloth of two thicknesses, which should be wrung as dry as possible and should be covered with several thicknesses of dry flannel to retain the warmth and moisture. The chest should be rubbed in the morning with the hand dipped in cool or tepid water, and covered with a dry flannel or chest protector through the day. The use of various cough mixtures for the relief of cough is generally attended by more harm than good, as a majority of them contain opium, to which their effectiveness in relieving cough is chiefly due, but which encourages the exhausting night sweats, and hence really occasions much harm, though temporarily contributing to the patient's comfort. As a general rule, patients run down, and the disease progresses much more rapidly after beginning the use of opium in any form.

It should be borne in mind that cough is merely a symptom, the significance and importance of which varies greatly in different cases. Sometimes it is best that it should be encouraged instead of being repressed. When the patient expectorates very freely, the cough is a necessary means of relieving the chest of matters which would seriously interfere with the functions of the lungs if retained, by filling up the bronchial tubes and air-cells. Cough is important in such cases as these, as the suppression of expectoration would be the surest means of hastening the death of the patient rather than encouraging the recovery. The

kind of cough which it is important to relieve is an irritable, ineffective cough, unaccompanied by any considerable degree of expectoration. This cough is sometimes excited by the irritation occasioned by an elongated uvula, for which the proper remedy is snipping off the end of the offending organ. Loaf sugar, honey, or a mixture of honey and lemon juice and other simple remedies familiar in every household, are often effective in relieving a cough which is accompanied by little expectoration. In cases in which cough cannot be relieved in any other way, and is very distressing and painful, the use of an opiate mixture is sometimes advisable, but should be administered only under the advice of an intelligent physician.

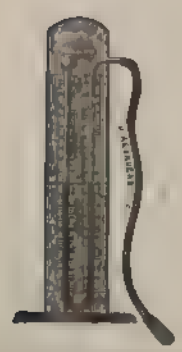


Fig. 312. Pneumatometer.

Fig. 313. Spirometer

5. *To Develop the Lungs.*—As one of the causes of lung disease is deficient exercise of the lungs, it naturally follows that suitable exercise of these organs constitutes one of the most important measures of treatment. The general means which may be employed for developing the lungs has already been described under the head of "Lung Gymnastics," page 720. Too much emphasis cannot be laid upon the importance of giving attention to these measures of treatment. The patient should make it a large part of his business each day to attend to his respiration. At equent intervals he should expand his lungs to their full capacity

(avoiding violent efforts, especially when there is danger of hemorrhage), repeating the exercise at frequent intervals through the day. One of the most observable features of this disease is progressively increasing rigidity of the chest walls and decrease of motion in the affected portions of the lungs. The loss of respiratory power is very readily shown by means of the pneumatometer, Fig. 312. A healthy adult will easily raise the column of mercury of the instrument to 60 or 100 degrees. But we have frequently found patients who could not produce an indication of more than two or three degrees, showing an almost entire loss of respiratory power. The diminished lung capacity is admirably shown by the spirometer, one form of which is shown in Fig. 313. Too little attention has been given in the treatment of consumption to regular and systematic efforts to develop the lung power and capacity, notwithstanding the full recognition of the fact, that their loss is one of the most marked features of the disease. Another means of increasing the lung capacity and power is special exercise, both passive and active, applied in such a way as to increase the strength of the respiratory muscles. Of active exercises some of the best are given under the head of "Swedish Movements." Figs. 332–234. Passive Movements consist chiefly in the rubbing and percussion of the muscles of the chest and back, and in the application to the patient, by an attendant for at least a half-hour daily, of some one of the most approved forms of artificial respiration. That described elsewhere as Sylvester's method is very convenient for this purpose. Another measure which we would strongly recommend is the application of electricity to the muscles of the chest. The application should be made sufficiently strong to cause contraction of the muscles. The best mode of application is to place the positive pole between the shoulders, applying the negative along the spaces between the ribs so as to cause contraction of the intercostal muscles. The application should also be made to the pectoral muscles which form the fleshy part of the breast. In addition to the other measures described, probably the best of all means of expanding the chest and increasing lung power is the pneumatic apparatus devised by Waldenburg, the construction and use of which has been described elsewhere. (See Fig. 218). We have now used this apparatus in quite a number of cases and have obtained decidedly beneficial results. We regard it as one of the most important remedial appliances for use in such cases. It is, of course, too cumbersome and expensive to be adapted to the home treatment of this disease; but a simple form of the apparatus may be

readily constructed by almost any tinsmith, which will enable the patient to derive nearly all the advantages of the pneumatic method of treatment.

6. *To Sustain and Invigorate the Patient in every Possible Way.*—As this disease is characterized in a remarkable degree by progressively increasing debility, no means should be neglected which will contribute in any degree to sustain the patient's strength and reinforce his waning vitality. A nourishing diet, abundance of sleep, cheerful surroundings, a plentiful supply of pure, fresh air, abundant daily exercise in the open air, particularly in horseback riding, exposure to the action of the sun's rays by exercise in the sunlight as well as by sun-bathing, and total abstinence from all depressing influences of every sort, are among the essentials of the hygienic management of this disease. Tonic applications of electricity and the judicious use of bathing, together with the daily employment of massage, frequent inunctions, and all other means of improving nutrition, are necessary parts of the successful plan of treating serious cases of pulmonary disease. Patients should be cautioned in regard to exercise, against exerting themselves to a degree to induce extreme fatigue, and to avoid violent exercises of all sorts, such as running, leaping, walking, going rapidly up stairs, speaking in a loud tone, or singing for a long time, or in any other way overtaxing the respiratory organs. Care should also be taken to avoid exposure to sudden changes of temperature. Patients accustomed to a warm atmosphere most of the time should in cold weather wear a respirator. When out of doors, they should take especial care to breathe wholly through the nose so as to avoid bringing cold air in contact with the mucous membrane of the lungs, on account of its irritating character. An excellent form of respirator is shown in Fig. 309. By breathing through the respirator the air is warmed before it reaches the lungs, and thus injury is prevented. In the absence of a respirator, an ordinary cotton handkerchief may be used for the purpose with advantage, being tied over the mouth and nostrils in such a way that the air drawn into the lungs must pass through it.

Much undue stress has been laid upon the influence of climate in the cure of consumption. The idea has prevailed that certain climates have a special curative effect upon this disease; but there has been a controversy as to which is the exact climate which possesses curative virtues, since it has been observed that patients get well under the

most diverse climatic influences. The diversity of opinion among physicians on this subject has caused some to advise patients to visit Florida, the West Indies, Mexico, and other tropical and semi-tropical regions, especially during the cold season of the year; while others have sent their patients to Minnesota and the Upper Lake regions, and even to more northern parts. A thorough discussion of the subject at a late meeting of the British Medical Association, in which Dr. Bennett and many other eminent physicians took part, led to the conclusion that the chief advantages derived from climates supposed to be favorable to recovery from this disease are uniformity of temperature and opportunity for abundant out-of-door exercise. Climates which are subject to rapid alternations of temperature, or in which the cold season of the year is so severe as to confine the patient within doors, or which in any other way interferes with daily and regular exercise in the open air, are unfavorable to this disease. We think, however, that many of the advantages of a change of climate may be obtained by careful management at home. In the summer season, in this latitude, a consumptive patient may enjoy nearly all of the advantages that can be obtained anywhere, especially if he is able to make a visit of six or eight weeks to the Upper Lake region during the latter part of July and August. In winter, by means of the respirator and proper attention to clothing, abundant exercise can be taken out of doors; and with sufficient care in regulating the temperature and moisture within doors and securing good ventilation, almost as good conditions can be enjoyed as in any climate to which the patient could go. We speak from practical experience after having carried through several winters patients who have previously found it necessary to spend the winter season in a warm climate.

In conclusion, a word must be said with reference to some popular errors concerning the disease. One of the most prominent of these is the idea that the use of alcohol is one of the most successful means of checking the progress of the malady. Many physicians have encouraged this error, and not a few drunkards have been made such by a physician's prescription, the intent of which was to cure the patient of a grave malady, but the effect of which was to make him the victim of a terrible vice. Evidence is yet wanting to show that alcohol has any curative value whatever in consumption, and there is plenty of evidence to show that the habitual use of liquor is one of the surest means of producing this disease. Within the last few years cod-liver

oil has become a fashionable remedy for disease of the lungs. It is now generally admitted, however, by the most intelligent and experienced members of the profession that the advantages claimed for this remedy are by no means substantiated by experience, and that its chief utility, if it has any, is simply due to its nutritive value as oleaginous food. As such, however, it is much inferior to good sweet milk or cream, or any other easily digested animal fat. This has been clearly shown by the experience of many physicians, and the time cannot be far distant when this nauseating and indigestible drug will occupy a much less prominent place than it has heretofore held. Preparations of malt and maltine have lately been introduced. We have used them to a considerable extent, and, we think, with advantage. Many practitioners do not hesitate to pronounce them vastly superior to cod-liver oil. They are certainly much more palatable, and disturb the digestive organs much less.

It is perhaps needless to say that the numerous quack remedies for consumption advertised in the newspapers are wholly without merit. There is no known drug which will cure this disease, or in any certain degree influence its progress. Numerous remedies have been recommended at various times as curative, but not one has thus far stood the test of experience. The reputation acquired by certain popular remedies are chiefly built upon fictitious cases and cases of individuals who may have recovered from some disease which was supposed by the individuals themselves to be of a consumptive character, but which was really of a much less serious nature. What has been said of quack medicines is also true of the numerous domestic remedies for this disease.

MILIARY TUBERCULOSIS.

SYMPTOMS.—Frequent chills; fever; very frequent and small pulse; exhausting sweats; dry tongue; often delirium or stupor; great prostration; cough; shortness of breath; at last, œdema of the lungs.

This disease must not be mistaken for what is known as acute or galloping consumption. It is the general manifestation of the same disease which in consumption is chiefly confined to the lungs, and in its course so closely resembles typhoid or intermittent fever that a correct diagnosis is frequently not made. An examination of the lungs shows almost an entire absence of the particular symptoms of local disease in these organs, about the only symptom which can be discovered being

great shortness of breath. The absence of symptoms in the lungs is due to the fact that all parts of them are equally affected, while in ordinary consumption some particular part of the lungs is diseased, other portions often remaining in a nearly healthy condition. An examination after death shows the mesenteric glands, spleen, liver, and in fact all parts of the body, to be affected with tubercles. The disease usually runs a rapid course, the patient dying, in most cases, in from forty to sixty days. The disease is generally a primary one, and is probably due to infection of the system with tuberculous matter. It seems to us probable, though the fact has not yet been proven, that infection most often occurs by the use of the flesh or milk of consumptive animals. It also sometimes occurs in the latter stages of consumption, the whole system becoming affected by the local disease.

Treatment.—Little can be done but to render the patient as comfortable as possible, since there is almost no hope of recovery; but as there is always a possibility as to a mistake of the nature of the disease, efforts for the relief of the patient should be unabated, even to the last. The most important measure of treatment is to control the raging fever as much as possible by sponge baths, compresses, etc. The same general rules of treatment should be followed which have been recommended for consumption. Cold applied to the chest is one of the best remedies for the shortness of breath. Ice should be applied to the head freely if the patient suffers much with headache, as is frequently the case.

PLEURISY.

SYMPTOMS.—ACUTE: *Chilliness; fever; sharp pain or "stitch" in the affected side, generally located below the nipple; pain increased by coughing, pressure, or lying on affected side; hot, dry skin; flushed cheeks; hard, quick pulse; frequent, short breathing; great nervousness; usually at first a grating sound heard over affected part; urine scanty and high-colored.*

CHRONIC: *Increasing debility and shortness of breath; slight pain; hacking cough; small, rapid pulse; slight fever; clear mucous expectoration; accumulation of fluid in the cavity of the chest.*

This is a very common disease, though not as common as is generally supposed, since many people are in the habit of calling every pain or "stitch in the side" a pleurisy pain. Transient pains of this character are much more frequently due to intercostal neuralgia than to pleurisy. The disease consists in the inflammation of the pleura, a membrane which lines the chest-walls and covers the lungs. The acute type of the disease occurs in two forms, one of which is termed dry pleurisy, because

there is no exudation or effusion. This disease presents scarcely any symptoms at all. It consists in the thickening of the pleura and adhesion of the lung to the chest-wall, and as it usually produces no serious results, it demands but little attention. In the several varieties of the form of the disease in which exudation or effusion occurs, more or less of the symptoms are found. Acute pleurisy usually runs a rapid course and ends in recovery. The exudation is generally very slight. The chronic form of the disease generally begins very insidiously, though it occasionally follows the acute form. It is accompanied by the accumulation of a large amount of fluid in the chest upon the affected side, which causes compression of the lungs and displacement of the heart, the latter organ being crowded over to one side or the other, according as the accumulation of fluid is in the right or left cavity of the chest. As the disease occurs most often upon the left side, the heart is generally found nearer the middle of the chest than it should be. In a patient whom we had under treatment a few months ago, we found the left cavity almost completely filled with fluid, the lung entirely collapsed, and the heart crowded entirely over upon the right side. The fluid in chronic pleurisy may be simply serum, or it may contain a larger or smaller proportion of pus. Cases in which the cavity is filled with pus are termed *empyema*. Adhesion of the lung to the chest-wall almost invariably takes place in all cases of pleurisy when recovery occurs. No particular harm results from this condition, however. In chronic pleurisy, the chest upon the affected side generally becomes contracted, and the lung rarely becomes fully expanded to its natural size.

Causes.—The causes of pleurisy are, 1. Injury to the pleura, as from fracture of the ribs; 2. Other diseases of the lungs, as pneumonia, consumption, or cancer; 3. General disease, as rheumatism, blood poisoning, scarlet fever, etc.; 4. General causes of an obscure nature not well understood, but probably similar to those which give rise to pneumonia, among which may be reckoned exposure to cold.

Treatment.—The principal treatment required by the acute form of this disease is confinement in bed; a restricted diet, consisting of oatmeal gruel, fruits and grains, and other light vegetable food; avoidance of animal food of all kinds excepting milk, of stimulating condiments and intoxicating beverages of all sorts; and for the relief of pain, hot fomentations applied continuously for several hours if necessary. The hot-water bag is a very useful means of applying fomentations in these cases. By wrapping the bag in a flannel cloth wrung out of hot

water the heat will be retained very much longer than when a fomentation is applied in the usual way. In cases in which the fever is high and the acute symptoms have passed away, a wet-sheet pack may be administered, or the patient may be sponged frequently with tepid water. In some cases the application of cold to the chest, by means of cloths wrung out of cold water, or even ice compresses, gives more relief than hot applications. In still other cases, the local symptoms are best controlled by means of cold compresses alternated at intervals of an hour or two with short fomentations. Recovery almost always takes place in the acute form of the disease.

Chronic pleurisy is a much more obstinate malady. It is generally not recognized until after its effects have become fully developed. If the accumulation of fluid in the chest has existed for several months, the collapsed lung becomes so permanently injured that its full use can seldom be recovered. The first object in treatment should be to induce, if possible, absorption of the fluid. This may best be done by the use of all measures which will improve the patient's strength and vitality. The same general course should be followed for this purpose as is recommended in the treatment of consumption. In addition to these general measures, alternate hot and cold applications should be daily made to the chest. Electricity may also be used with benefit. If the patient is strong, the vapor or hot-air bath may be employed with advantage two or three times a week. If, after the faithful employment of these measures for a reasonable length of time, there are no evident symptoms of improvement as indicated by a decrease in the shortness of breath, the cough, and the amount of fluid in the chest as shown by percussion, the fluid should be removed from the chest by tapping or aspiration.

HYDROTHORAX—DROPSY OF THE CHEST.

SYMPTOMS.—Great difficulty in breathing, or shortness of breath, especially on slight exertion; dullness on percussion of the lower part of the chest.

Dropsy of the chest, or, as the disease is generally termed in popular phraseology, "water on the chest," is rarely a primary disease, generally occurring in connection with general dropsy, resulting from disease of the heart or kidneys.

Treatment.—Measures of treatment should be directed toward the primary disease of which this affection is simply a result. These measures, which are more fully described elsewhere, consist chiefly in such

remedies as will excite great activity of the skin, as vapor and hot-air baths. In case general measures are not sufficient to cause absorption of the fluid, tapping or aspiration of the chest may become necessary. Fig. 314 represents one of the best forms of apparatus for performing aspiration, which is much to be preferred to the old operation of tapping. In using this instrument, the chest is punctured with a fine needle which is hollow and is connected with a flexible tube, which is, in turn, connected with the cylinder of an air-pump. By the creation of a vacuum, a strong suction force is exerted, which produces a steady flow of fluid through the needle into the instrument, from which, by reverse action, it is expelled into a convenient vessel. Several simple forms of this apparatus have been devised. The simplest of all is the ordinary Davison's syringe. On one occasion, when our aspirator was accidentally broken by an assistant just as we were about beginning an operation upon a patient whose left lung cavity was almost completely filled with pus, we performed the operation by means of the Davison's syringe, as suggested by our old teacher, Prof. Austin Flint, Sen., of Bellevue Hospital, by whom this ingenious method was first employed. In the case referred to, we removed several quarts of green pus which had been confined within the chest for more than a year. The relief afforded the patient by removal of the fluid is generally very great, though at first severe coughing is produced by expansion of the partially collapsed lung. Unfortunately, complete recovery rarely takes place, owing to the obstinate character of the disease upon which this affection depends.

Fig. 314. Aspirator.

PNEUMOTHORAX.

SYMPTOMS.—Patient feels as though "something had burst" in his chest; very difficult breathing; patient lies upon the affected side, or sits up; severe pain in the region of the lower ribs; intercostal spaces obliterated on the affected side; when on left side, displacement of the heart to the right side; if on right side, displacement of the liver downward; unnatural resonance of the chest; usually, also, fluid, which changes position with change in position of patient; absence of natural breathing sounds; splashing sounds heard by placing the ear to the chest and shaking the patient quickly.

In this disease, one of the cavities of the chest is filled with air, the lung being in a state of collapse. The cause of the disease is perforation of the lung, which may result either from accident, as from a wound by a bullet, knife, or bayonet, or it may be the result of breaking down of portions of the lung, as in emphysema and consumption. With each active inspiration the air passes through the opening in the lung into the pleural cavity, and, as the opening is generally ragged, so that the air cannot escape during expiration, the quantity of air increases with each breath, until the pressure within the cavity becomes so great as to equal the force of an inspiration. Sometimes, in case of wounds, the lung cavity is connected with the connective tissue spaces, and the air penetrates the tissues of the chest and trunk, causing, in some instances, enormous bloating. The lung on the affected side is, of course, completely compressed, so that no air can enter it. Much pressure is also exerted on the lung on the strong side, caused by the expansion of the affected cavity. When the perforation occurs on the left side, the heart is crowded over to the right. We have met instances in which the apex beat of the heart, which is usually felt just beneath the nipple, was displaced, by the pressure of air in the left cavity, to the extreme right side of the breast-bone. Within a day or two after perforation occurs, pleurisy is usually set up, which occasions the exudation by which the cavity is gradually filled, in some instances, completely. We recently had under treatment a case of this character, which, owing to the complete filling of the chest with liquid, had been pronounced by a prominent professor in a medical college to be a case of fibrous growth in the chest. We pronounced the case one of empyema, and proved the diagnosis by performing the operation of aspiration and removing several quarts of pus.

SYMPTOMS RELATING TO THE RESPIRATORY ORGANS.

Cough.—Coughing is a convulsive expiratory effort, usually repeated several times in rapid succession. It is symptomatic of several varieties of conditions, but by no means always indicates disease of the respiratory organs. It is present in consumption, pneumonia, pleurisy, chronic bronchitis, emphysema, pharyngitis, laryngitis, and, in fact, may appear as a symptom in nearly all diseases of the respiratory organs. It may also appear as a symptom of disease of the spine and spinal cord, of the œsophagus, the heart, the liver, and the stomach. In occasional instances, it may arise from the irritation of worms in the intestines, from the pressure of tumors in the chest, as well as from gout, rheumatism, and uterine and ovarian derangements. Occasionally it is seen in very young children who are teething, being due to sympathetic irritation. Attention has very lately been called to what is known as *ear cough*, arising from disease of the ear.

Chin Cough is a term frequently applied to a light, hacking cough in small children, arising from slight irritation of the throat or air-passages. It was formerly applied to whooping-cough.

Stomach Cough is generally due to pharyngeal catarrh, which results from derangement of the digestion.

Nervous Cough is often occasioned by disease of the spinal cord. Under this head may also be included cough which is dependent more upon habit than upon any local disease.

Painful Cough usually arises from some serious disease of the respiratory organs.

Hacking or Tickling Cough is quite frequent in the first stage of consumption when it results from sympathetic irritation. It may be due to an elongation of the palate.

Heavy or Hollow Cough is one of the symptoms of chronic bronchitis and advanced consumption, and is usually attended by copious expectoration.

Dry or Tight Cough is the accompaniment of the first stages of cold in the chest. It is due to congestion, with slight secretion.

A Short, Sharp Cough generally accompanies the first stage of pneumonia.

The Hoarse, Barking Cough of croup is readily recognized by its peculiar character. In true or membranous croup, the hoarse, barking character gives way to a whistling cough. A loose cough, attended by a slight rattle, is an indication of improvement in the last-named disease.

The Whooping Cough, characteristic of the disease of that name, is so called from its violent spasmodic character, and from the fact that the spasmodic, expiratory efforts attending the cough in this disease are terminated by a very greatly prolonged inspiration, attended by the peculiar sound very aptly termed a whoop.

Treatment.—The remedies for a cough vary according to its cause. An irritable, hacking cough can often be relieved by means of a little lemon juice; dissolving a small piece of white sugar upon the tongue; or chewing slippery elm. Simply gargling a little hot or cold water will produce relief, as well as the use of a steam inhaler. Painful cough is best treated by hot applications for the relief of the pain. Liver, stomach, and ear cough are cured by treatment of the organs primarily affected. Nervous cough can often be cured by a simple effort of will-power. The patient, having formed the habit of coughing from a slight temporary irritation of the throat, continues to cough when the original cause is removed. By a simple exertion of the will, this cough can usually be controlled. Equal parts of lemon juice and honey will frequently relieve a harrassing cough. The chest compress is also useful.

Pain in the Chest.—Pain in the chest may be stinging, burning, or lancinating in character; it may be dull and continuous, or sharp and only occurring at intervals. Patients also frequently complain of weight, oppression, constriction and tightness in the chest. Sharp pain is most often due either to neuralgia or pleurisy. Dull pain in the right or left side, beneath or between the shoulders, may be due to affections of the liver, spleen or stomach, as well as to pulmonary disease. A stinging or burning pain beneath the breast-bone is one of the symptoms of chronic bronchitis.

Treatment.—The best remedy for pain in the chest is the application of hot fomentations once or twice a day; and if the pain is chronic, the application of a warm compress to be worn through the night. Extensive pain in the chest may require a chest pack. A stitch in the side and the acute pain of pleurisy are often very greatly mitigated by the application of a soft woolen bandage, drawn tightly about the chest, in such a way as to restrain the movement of the affected part in respiration. The same end may be reached by applying a large pitch plaster or several adhesive strips over the affected part.

Shortness of Breath.—This symptom may arise from restriction of respiration caused by pain, as in pleurisy and often in intercostal

neuralgia, or it may arise from the disablement of a larger or smaller portion of the lungs, as in pneumonia, dropsy of the chest, chronic pleurisy and pneumothorax. Shortness of breath is also present as a marked symptom in consumption, and in congestion of the lungs arising from any cause, particularly from disease of the heart. Simple weakness, as in case of nervous debility, may give rise to shortness of breath.

Treatment—The proper remedy is the removal of the cause. When this can be accomplished, the difficulty will speedily disappear; but, as in many cases the cause is one which cannot be remedied, the symptom, of course, remains, notwithstanding the application of the most varied remedies; and the most that can be done, is to mitigate the inconvenience occasioned by this often very distressing symptom. The aggravation of this symptom by exercise suggests that, when it is very urgent, the patient should be kept as quiet as possible. When it is due to the accumulation of gas in the stomach and bowels, as sometimes happens, speedy relief may be obtained by the evacuation of the bowels by a copious hot enema. Shortness of breath due to pain or congestion is generally relieved by hot fomentations. When due to disease of the heart, galvanic electricity applied to the sides of the neck sometimes gives very great relief. In dropsy of the chest, tapping or aspiration is sometimes a means of affording great comfort, at least, temporarily.

In cases of emphysema, chronic bronchitis, and heart disease, in which the lungs are unable to perform a sufficient amount of work to purify the blood, as indicated by lividness of the face and lips, together with other symptoms of insufficient respiration, great relief may often be afforded by the employment of artificial respiration. What is known as Sylvester's method, elsewhere described, may be employed, or better, the following method suggested by Dobell, an eminent English physician: Place the patient in a chair, let a strong attendant stand behind him upon a stool, elevated just sufficiently to give him command over the shoulders of the patient without stooping forward too much. Let the attendant place his hands in front of the patient's shoulders, taking hold in the axilla beneath them. Now let him lift the patient steadily upward sufficiently to raise his weight off the chair upon which he is sitting. After retaining this position for a few seconds, he should be let down slowly. After resting a few seconds, the operation should be repeated. The patient should be instructed to

respire with the motions of the attendant. By the repetition of this exercise for half an hour, the patient's condition will, in many cases, be very much improved, the livid appearance of the face and lips disappearing, and not infrequently, the fatal moment may be long postponed. By a continuance of these measures at frequent intervals, for a few days, it may be deferred for weeks and often for months and years. It is quite probable that many patients die from carbonic acid poisoning who might be saved by the adoption of these measures, if they were thoroughly applied.

Sneezing.—This symptom consists in an explosive expiratory effort, the air being expelled through both the mouth and nose, but chiefly through the former. It is oftenest occasioned by irritation of the nasal and mucous membrane. It may arise from titillation, inhalation of dust, congestion incident to taking cold, or congestion present in influenza and hay fever. It is, in some cases, a purely nervous symptom. With many persons, sneezing is excited by looking at the sun or at a bright light.

Treatment.—This symptom rarely becomes so troublesome as to require special attention by way of treatment, and yet, it is often at least convenient to be possessed of a remedy to check or relieve it. The disposition to sneeze can ordinarily be relieved by rubbing the nose between the thumb and finger. It may also be checked by pressing the finger against the upper lip, just below the nose. In some cases, the nasal douche, administered with a fountain syringe, is essential. The best solution employed is a teaspoonful of common salt, dissolved in a pint of tepid water, or fifteen to twenty drops of carbolic acid, well dissolved.

Hiccough.—This symptom is produced by a sudden spasm of the diaphragm. It may be excited by eating too much, thus causing indigestion and irritation of the stomach; drinking a large quantity of cold water, or by long-continued and immoderate laughter. It also occurs, sometimes, in the last stages of wasting diseases, when it is regarded as a very grave symptom, indicating approaching dissolution.

Treatment.—Hiccough can generally be stopped by taking a very small sip of very cold water or swallowing a small piece of ice. It may also generally be checked by holding the breath a long time, so as to interrupt the paroxysm, which occurs at regular intervals. When it is very obstinate, and is evidently the result of indigestion, a copi-

ous warm water emetic should be administered for the purpose of emptying the stomach. In ordinary cases, the symptom will disappear of itself, after a short time.

Foul Breath.—Although this symptom does not necessarily pertain to the respiratory organs, it may be considered here, perhaps more properly than in any other connection. Foulness of breath may arise from decaying teeth, ozena, ulceration of the tonsils, foul emanations from the stomach, and from the fetid expectorations of consumption in its advanced stages, or cases of chronic bronchitis in which there is great dilatation of the bronchii, allowing accumulation and decomposition of purulent secretions of mucus.

Treatment.—Decaying teeth should be cleansed and carefully filled. Catarrh, attended by fetid secretions and ulceration of the tonsils, should receive the necessary treatment. Foul emanations from the stomach may be best corrected by the adoption of such measures as will improve the digestion. The use of charcoal either in capsules or in the form of charcoal crackers, is an excellent measure for temporary relief. The fetid odors arising from decomposing secretions in catarrh, bronchitis, consumption, and in gangrene of the lungs, may be in a great degree corrected by the inhalation of carbolic acid vapor. A few drops of pure carbolic acid or creosote, say four to six drops of either, should be placed in the inner cup of the steam inhaler, shown in Fig. 274, and inhaled three or four times a day.

DISEASES OF THE CIRCULATORY ORGANS.

The Pulse in Health.—The pulse is about 120 to 140 at birth. It gradually diminishes until it reaches about 90 at the age of seven or eight years. In adult life it is 65 to 75, and in old age not much over 60. Females have a somewhat more frequent pulse than males, the difference being five or six beats a minute. A difference of five to ten beats is made by changing from a lying position to sitting, and from sitting to standing. By violent running the pulse may be increased to 140 or more.

The pulse is felt by placing the first two fingers upon the artery at the outside of the arm, with the second finger toward the heart. The force of the heart is determined by pressing with the second finger and noticing how much force is required to compress the artery so that the pulse cannot be felt by the first finger. The pulse may also be felt at the temple, the neck, and in various other situations.

The Pulse in Disease.—The following are the principal varieties of the pulse :—

Frequent Pulse. A pulse diminished in force, increased in frequency. A characteristic of debility.

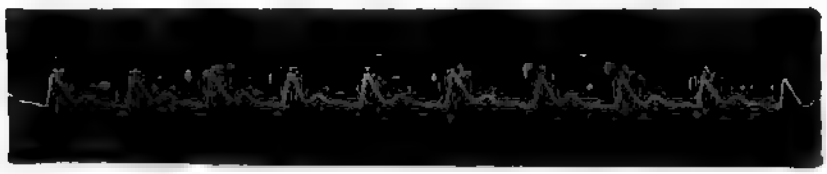


Fig. 315. Pulse of a Healthy Person.

Febrile Pulse. In fever, the rate of pulsation and usually also the force is increased.

Feeble Pulse. A pulse that is readily extinguished by pressure with the finger. Indicative of great debility or exhaustion.

Fig. 316. Pulse of a Tobacco-User.

Thready Pulse. A pulse which gives the sensation beneath the finger of a vibrating thread. Present in cases of very great debility.

Slow Pulse. An unnaturally slow pulse occurs in cases of brain poisoning or apoplexy; it is present in compression of the brain from fracture, and in unconsciousness from opium or liquor.

Quick Pulse. An abrupt, jerking pulse, either frequent or moderate in rate of pulsation.

Hard Pulse. A pulse which seems to indent the finger. Indicates great excitement of the circulation.

Intermittent Pulse. A pulse which now and then loses a beat. Indicative of either functional or organic disease of the heart.

Irregular Pulse. A pulse which is irregular in frequency and force. The irregularity may be only slight, or may be extreme. Is generally found in heart disease. Is very often the result of the use of tobacco and of strong tea and coffee. Figs. 315 and 316 show the contrast between a healthy pulse and the irregular pulse of a tobacco-user, as indicated by the sphygmograph.

Irritable Pulse. A pulse which is both frequent and hard.

Wiry Pulse. A pulse which gives the impression of a vibrating wire.

Palpitation of the Heart, as will be further explained elsewhere, is an excessive action of the heart. Throbbing at pit of stomach is usually due to palpitation of the aorta.

Hemorrhage as a Symptom.—Hemorrhage, not from a wound, is generally caused by a diseased condition or morbid state of the blood-vessels. Spitting of blood may indicate hemorrhage from the stomach, or lungs, or simply from the nose or mouth. Nose-bleed is most often indicative of congestion of the head. It is a bad symptom when occurring in a person who is very feeble from a wasting disease. Hemorrhage from the bowels is a very grave indication when it occurs in connection with dysentery or typhoid fever; but it is generally indicative of nothing more than the rupture of a dilated vein in the rectum, due to piles or hemorrhoids. Bleeding from the bladder may indicate disease of either the bladder or the kidneys. Hemorrhages into the skin occur in *scurvy* and *purpura*.

HYPERTROPHY, OR OVERGROWTH OF THE HEART.

SYMPTOMS.—Heavy beating of the heart; visible pulsation of the arteries; ringing in the ears; spots before the eyes; dizziness; in severe cases, apoplexy.

This is a disease which may exist for many years without its presence being manifest by symptoms sufficiently severe to attract attention.

Causes.—The most common cause is disease of the valves of the heart, which interferes with the passage of the blood through its cavities into the arteries. It also occurs very frequently in persons addicted to the use of stimulants. The use of alcoholic liquors and tobacco are particularly productive of this affection.

Treatment.—The treatment of the disease consists in an abstemious diet, excluding all alcoholic drinks, condiments, excess of animal food, tea, coffee, tobacco, and stimulants of all kinds; overeating, and the use of hot drinks, or excessive drinks of any kind must also be avoided. In Germany, where it is frequently the result of high living and the use of beer, the "whey cure" and "grape cure" are particularly noted as effective means of treating this affection.

In the first of these methods, the patient is made to subsist almost wholly upon the use of the whey of milk. The grape cure consists in confining the patient to the use of grapes almost exclusively. He is allowed to take from three to six or eight pounds of grapes each day. The water cure, even as practiced in the old-fashioned water-cures of Germany, is also advantageous. The essentials of treatment, in addition to careful dietetic measures, are the wet-sheet pack and warm full bath, repeated as often as the patient will bear, without much reduction of flesh or strength. If there is a great degree of plethora, the patient being full-blooded, with excessive redness of cheeks and lips, such measures as the pack, full bath, and wet-hand rub, may be repeated daily for several weeks without detriment. Another excellent measure, suggested by Prof. Niemyer, is wearing constantly over the region of the heart a small bag filled with iced water. Frequent changes of the water would of course be required in order to continue the efficiency of the remedy. In cases in which enlargement is due to disease of the valves of the heart, the evils above described do not occur, and treatment for the affection is not required, as the enlargement is rendered necessary by the unusual obstacles which the heart has to overcome in its action.

DILATATION OF THE HEART.

SYMPTOMS.—Small, feeble pulse, frequency increased on slight exertion; enlargement and pulsation of the veins of the neck; congestion of the lungs, liver, kidneys, and stomach; dropsy; distress in the region of the heart; shortness of breath continually, preventing the patient from lying down; angina pectoris; impulse of the heart diffused over a large space.

Causes.—Dilatation of the heart is most often the result of disease of the valves of this organ. It usually follows enlargement of the heart; the walls after becoming thickened to a certain extent, being stretched until they become thin and feeble. Enlargement of the heart from any other cause than valvular disease, may also be followed by dilatation.

Treatment.—The treatment of this disease consists chiefly in improving the patient's condition as far as possible, by the avoidance of stimulating foods and drinks, especially by total abstinence from tea, coffee, tobacco, and alcoholic drinks. All depressing influences, especially sexual excesses, and violent exertion of all sorts, should be carefully avoided. The disregard of this caution has frequently occasioned rupture of the heart, and sudden death. The application of electricity to the spine, to the neck, and over the region of the heart, is an excellent measure of treatment, and will, perhaps, accomplish as much as any other one remedy. We have frequently seen almost marvelous results from the use of electricity in this disease, in cases in which it was the result of long standing valvular disease of the heart.

FATTY DEGENERATION OF THE HEART.

SYMPTOMS.—Slow and feeble or irregular and frequent pulse; shortness of breath on exertion; occasional pain in the region of the heart; attacks of faintness or unconsciousness, somewhat resembling apoplexy; sometimes presence of arcus senilus, or white ring around the edge of the cornea.

There are two kinds of fatty degeneration of the heart, one in which the heart is overloaded with fat, and the other in which the muscular fibres of the heart are replaced by fat.

Causes.—The principal causes of both varieties of fatty degeneration are, gluttony, the use of alcoholic drinks, and excessive use of fat foods. It is also sometimes the result of Bright's disease of the kidneys and poisoning with phosphorus.

Treatment.—The great danger to be apprehended in this disease is sudden rupture of the heart, upon a slight exertion, on account of the weakening of its walls. If the disease has not existed too long a time, a cure may take place through careful attention to diet and hygienic rules together with an avoidance of the special causes which may have produced the affection. The patient must also avoid all violent exercise of all sorts. He should not allow himself to become excited or angry under any circumstances, as a fit of anger is as dangerous for him as a dose of poison. Violent exercise of all sorts, as in lifting heavy weights, running to catch a train, hurrying up stairs, or straining to relieve the bowels in constipation, must be carefully avoided. Sugar, fat, all condiments, must be thoroughly discarded.

PERICARDITIS—INFLAMMATION OF THE HEART-CASE.

SYMPTOMS.—May be slight; if severe, high fever, pain over the heart extending to the shoulder-blade, collar-bone, shoulder, and down the arm; palpitation; irregular pulse; shortness of breath; patient cannot lie on left side; noises in the ears; nosebleed; cough; debility; faintness; suffocative paroxysm; general dropsy; restlessness; great anxiety; delirium; weakness of heart-beat; rubbing sounds heard on listening over the heart.

This disease is an inflammation of the sac which contains the heart. It is a very serious disease, and not infrequently ends fatally, although the symptoms are sometimes difficult to distinguish from those of other diseases with which it may be associated.

Causes.—This disease very rarely occurs by itself. It is almost always a part, or result of some other affection, as of pleurisy, rheumatism, disease of the kidneys, pneumonia, peritonitis, scurvy, spotted fever, scarlet fever, measles, etc. Rheumatism and pleurisy are the most frequent causes.

Treatment.—The treatment given should be chiefly directed to the removal of the disease of which the pericarditis is a result. The patient should be kept very quietly in bed, carefully protected from drafts, although not overheated by too much clothing, and should be given a nourishing and very simple, unstimulating diet. Fomentations over the seat of the pain, and the continuous use of warm compresses, are perhaps the most useful measures that can be employed. Sometimes the disease is so severe that the heart-case becomes filled and distended with fluid which gradually interferes with the action of the heart, and sometimes occasions death by interrupting it altogether. This may now be relieved by means of the aspirator, though a few years ago it would have been considered the height of folly to attempt tapping of the heart-case.

ENDOCARDITIS—INFLAMMATION OF THE LINING MEMBRANE OF THE HEART.

SYMPTOMS.—Palpitation; pain and uneasiness in the region of the heart; fever; restlessness; feeble pulse; shortness of breath; patient insists on lying on his back; peculiar murmurs heard on listening to the chest.

This disease affects the left side of the heart most frequently, choosing for its principal seat the valves. The result of the inflammation is a production of little warty growths upon the valves, which interfere with their action; but the worst result sometimes occurs subse-

quently, from the contraction of the parts affected by the inflammation, causing stiffness and pressure, closure of the valves, and thus obstructing the passage of the blood from the heart. Any one or all of the four valves of the heart may be affected. The usual results of valvular disease of the heart are, enlargement, which is finally followed by dilatation; pulmonary congestion, which results from an obstruction of the free passage of blood from the lungs; congestion of the stomach, liver, spleen, and all internal organs including the brain, from the obstruction of the venous circulation; general structural and functional derangement of all the internal organs; and finally, general dropsy, showing itself first in the feet and ankles, gradually extending to the body, involving the abdominal cavities, chest, and upper extremities, and ultimately resulting in death. One of the immediate dangers in this affection is *embolism*, which consists in the obstruction of the artery with a small plug, which is formed in the heart by the adhesion to the excrescences upon the inflamed valves of portions of the fibrine of the blood, which are after a time dissolved and swept along with the blood current until they reach arteries of so small a size that they are stopped, and plugging the vessel, cut off the supply of blood from the part to which it is distributed. When this takes place in the brain, where it is most likely to occur, symptoms of paralysis appear, as loss of speech or memory of words, etc.

Causes.—This disease, as stated with reference to pericarditis, rarely occurs by itself. It is most often due to rheumatism. It may also occur in consequence of the inflammation of the heart-case, pneumonia, pleurisy, Bright's disease, scarlet fever, and other eruptive fevers.

Treatment.—The treatment of this affection must be the same as that recommended for pericarditis, together with the treatment necessitated by the disease of which it is the result, or with which it is connected, and that described for valvular disease of the heart.

INFLAMMATION OF THE HEART.

SYMPTOMS.—Weak action of the heart and feeble pulse; first sound of heart weak or absent.

This is an inflammation of the substance of the heart itself. It is a disease of rare occurrence, and most frequently results from the high temperature incident to typhoid and other febrile diseases.

Treatment.—The best treatment for this affection is that of a pre-

ventive character. This consists chiefly in the application, during the fevers which it is likely to follow, of packs, sponge baths, cold compresses, cold enemas, and all other measures which are well known to control abnormal temperature.

VALVULAR DISEASE OF THE HEART.

SYMPTOMS.—Palpitation; heavy beating of the heart and shortness of breath, especially on slight exertion or excitement; active congestion of the lungs; congestion and torpor of the liver with jaundice; dropsy; distress in the region of the heart, in some cases angina pectoris; congestion of the stomach, causing dyspepsia; scanty and highly colored urine, sometimes bloody; murmurs.

The cause and nature of this disease cannot be well understood by the reader, without careful study of the structure of the heart. This we have described in another connection, and would call attention to Figs. 97 and 98, which show one of the valves of one side of the heart, open and closed. Various changes occur which are chiefly due to inflammation; the valves of the heart may become thickened and contracted, so that their function is performed very imperfectly. Two forms of impairment of the valves occur, one which prevents the blood from entering or leaving the cavities of the heart freely, known as obstruction, the other which prevents the complete closure of the valve, and so allows the blood to reenter the heart, after it has once been expelled from it, known as regurgitation. The results of valvular disease of the heart are those which have already been described as resulting from *endocarditis.*

Causes.—Rheumatism and pleurisy are the most common causes of valvular disease of the heart. Old age and syphilis are also productive of disease of the valves.

Treatment.—This disease is one which is by its nature rendered incurable. Nevertheless, much can be done to prolong the life of patients and to add to their comfort. The danger of sudden death is by no means as great as is generally supposed, as very few people suffering with this affection meet with sudden death in consequence of it. It is necessary that persons having valvular disease of the heart should carefully avoid overtaxation of the heart by overexercise, either mental or physical, particularly the latter. They should never indulge in running rapidly, playing games requiring vigorous exercise, or in any exercise whatever requiring violent exertion. All depressing influences, as the use of tea and coffee, tobacco, alcoholic liquors, and especially sexual excesses, should be scrupulously avoided.

Great care should be taken to avoid taking cold, to prevent liability to congestion of the lungs. The dropsy which occurs in the last stages of the disease should be treated by such measures as will excite vigorous action of the skin, as the hot-air and vapor baths, wet-sheet pack, and vigorous friction of the skin. A milk diet has been recommended for dropsy. It is generally insisted upon, however, that the patient shall take a dry diet. We think it a mistake to deprive the patient of fluids, as the blood is so thickened that the vital functions are in some cases interfered with. A moderate quantity of fluid should be allowed. Turkish and Russian baths should be interdicted to the majority of patients. This is especially true of the Russian bath This should never be taken by persons suffering from serious valvular disease of the heart. Persons suffering from rheumatism should give the disease prompt and vigorous attention, as it is one of the most frequent causes of the malady, and intensifies it by repeated attacks.

EMBOLISM AND THROMBOSIS.

Embolism is the clogging up of an artery by means of a small clot of blood or a fragment of calcareous matter from the heart, fat globules, hydatids or bacteria, which are carried by the current of blood to the point where embolism occurs. Thrombosis is a clot formed at the point where it is found. When any blood-vessel is completely closed by embolism or thrombosis, the part to which the blood is distributed, if not supplied with blood in some other way, suffers for want of nutrition. The brain, spleen, kidneys, lungs, and liver are most likely to be affected by embolism. A year or two ago we had under our care a patient in whom embolism of the large artery of the arm had occurred, the result of which was complete extinction of the pulse of that arm. As the patient subsequently died from a tumor in the chest, opportunity was afforded for a post-mortem examination. The obstruction was found at the upper part of the arm, the channel from that point downward being wholly obliterated.

Treatment.—It is important that persons who have clots in any large blood-vessels in consequence of an extensive injury or a surgical operation, should keep very quiet until the clots become thoroughly organized or permanently fixed in their location so as to prevent the danger of disengaging fragments and producing embolism thereby. Special symptoms arising from embolism or thrombosis should be treated according to the indications in each case.

RUPTURE OF THE HEART.

This accident occurs in consequence of fatty degeneration of the organ, excessive dilatation, aneurism, and other diseases by which the walls of the heart are weakened. It usually occasions instant death.

PALPITATION OF THE HEART.

This is a functional disorder of the heart, probably dependent upon some sort of disturbance in the nerve centers having control of the organ. It consists in a rapid and disturbed action of the heart so intense as to be painfully perceptible to the patient. The heart, in some cases, seems to the patient to roll or turn over. In some cases there is an interruption of the beating of the heart, one, two, or often three beats being lost. The sensation of the patient during the suspended beating is that he is about to die, so that great alarm is occasioned. The attacks of palpitation usually occur at intervals, the patient in the meantime being wholly free from inconvenience.

Causes.—Exposure to cold, the use of stimulants and of tea, coffee, and tobacco, sexual excesses, and especially self-abuse, are among the causes of palpitation of the heart. The palpitation also occurs as the result of indigestion or anæmia. Palpitation often accompanies organic disease of the heart. A careful examination should be made to determine whether or not the patient is suffering from valvular disease.

Treatment.—The patient should have tonic treatment, nutritious, careful and regular diet, should abstain from excesses of all kinds, take abundance of sleep, with plenty of out-of-door exercise, and should abstain wholly from tobacco, coffee, tea, and spirituous liquors. Palpitation of the heart is often mistaken for real organic disease of the organ. We have met many cases in which patients supposed themselves to be the subjects of organic disease of the heart on account of the obstinate and long-continued palpitation of the organ. A young man who was under our care a year or two ago was a remarkable illustration of this fact. He had been examined by many physicians, and was by a majority supposed to have an organic affection of the heart. Notwithstanding, the improvement of his digestion caused the entire disappearance of his heart symptoms, and we have every reason for believing that the trouble was wholly functional, though it was so violent as to give him great discomfort and excite alarm. A careful regulation of the diet is in most cases all that is necessary to

effect a cure. The exact nature of the diet should depend upon the particular condition of the stomach. Alternate hot and cold applications to the spine and the application of galvanic electricity to the throat are deserving of strong recommendation as among the most successful measures of treatment in this disease. In chronic cases, relief will be obtained by wearing over the heart a tin or rubber bag filled with iced water, which must be frequently renewed. Sympathetic palpitation may be relieved by bending the head downward, allowing the arms to hang down. The effect of this measure is increased by holding the breath a few seconds while bending over. Another ready means which will relieve most cases very quickly is pressing strongly upon the large arteries on either side of the neck. This generally gives instant relief.

Throbbing at the pit of the stomach is usually due to palpitation of the aorta, caused by irritation of the stomach. It may also arise from aneurism. Palpitation of other arteries, as those of the neck, temples, groins, and other parts of the body may occur. We recently had under treatment a patient who complained of palpitation in all parts of the body. The local application of cold is the best remedy. In case of aortic palpitation, the ice-pack to the spine may be employed.

ANGINA PECTORIS.

SYMPTOMS.—Intense pain in the region of the heart, sometimes extending down the left arm to the ends of the fingers; a sense of suffocation and of impending death; great pallor of the face; the pulse usually small, feeble, and irregular.

Angina pectoris is a nervous disease of the heart, usually accompanied by fatty degeneration, valvular disease, obstruction of the coronary arteries or arteries of the heart, and various other derangements of the heart and aorta.

Causes.—The direct causes of the disease are not known. Probably they are similar to those which give rise to other obscure nervous diseases.

Treatment.—The most important of all measures consists in the proper regulation of the diet and regimen of the patient during the intervals of the attacks. By this means it may be hoped to ward off the disease. The best remedy for immediate relief of pain is nitrite of amyl, a powerful drug, three to five drops of which should be placed on the handkerchief and inhaled by the patient. Persons subject to these attacks should carry with them a small bottle containing a sponge saturated with the nitrite, which may be placed to the nose when necessary.

BASEDOW'S DISEASE, OR EXOPHTHALMIC GOITRE.

SYMPTOMS.—Remarkable rapid pulse, from one hundred to one hundred and forty a minute; unusual prominence of the eyes, giving them a staring or ferocious look; enlargement of the thyroid gland; debility and anæmia; mental depression; nervousness; sleeplessness; in women, amenorrhœa.

This is undoubtedly a nervous affection which affects some parts of the circulatory apparatus, though it is a rare disease and not well understood.

Treatment.—The eminent Dr. Flur says in reference to treatment, "Hygienic measures are probably of greater importance than remedies." The patient should be surrounded by cheerful influences, the diet should be palatable and nutritious, and abundant out-of-door exercise should be taken. The application of electricity is recommended as an excellent remedy for this rare disease.

ANEURISM OF THE HEART.

SYMPTOMS.—The symptoms resemble valvular disease of the heart, with pains much greater than in the latter affection.

This disease consists in the formation of a sac in the walls of the heart which communicates with the cavity of the organ. The sac frequently increases in size through stretching. It sometimes becomes as large as the heart itself. Fortunately, the disease is quite rare, as it is almost certainly fatal. The principal cause of this malady is rheumatism.

Treatment.—The most that can be done for the patient is to restrain him from all violent exertion and give him a careful, nourishing diet, withholding all alcoholic stimulants, tea, coffee, tobacco, and other narcotics. Perfect rest upon the back in bed for two or three months, and a very meager diet, has been recommended as a means of treatment by a very eminent Irish physician.

DISEASE OF THE ARTERIES.

The arteries are, as a general rule, quite free from disease, but not wholly so. The principal affections are, aneurism and calcification. Inflammation of the arteries is a very rare disease, occurring chiefly in very old age; but sometimes in syphilitic and other affections, a peculiar kind of inflammation of the coating of the arteries occurs. It is followed by a chalky deposit, which is known as calcification of the

artery. We have met several cases in which this process had extended to such a marked degree that the hardened arteries could be felt in various parts of the body, giving to the fingers the sensation of a pipe-stem broken in various fragments. Aneurism of the arteries is a disease which frequently arises from this same kind of inflammation. It is further described in the section devoted to surgery.

DISEASE OF THE VEINS.

SYMPTOMS.—Pain on pressure; swelling and redness following course of vein and extending toward heart; when suppuration occurs, chills and wandering pains; much disturbance of the system.

Inflammation of the veins, or phlebitis, occurs occasionally, though less frequently than was once supposed. It is both a cause and a result of thrombosis. It is a dangerous disease, often causing death.

Treatment.—The proper treatment, when it is known to occur, is continuous application of hot fomentations. The patient should be kept very quiet to prevent clots from being dislodged and carried into the circulation.

VARICOSE VEINS.

This is a condition in which the veins are greatly dilated and become tortuous in their course. It is occasioned by occupations which require long standing upon the feet, by constipation, and especially, in women, by pregnancy.

Treatment.—The disease is seldom cured; but its inconvenience may be greatly lessened by the use of the elastic silk stocking or the elastic bandage. The latter measure we very much prefer for the majority of cases. The bandage should be applied from the toes to above the affected part. It should be applied smoothly and with even pressure. Little pressure is required, as the natural swelling of the limb in standing will produce all the tension necessary, although a very slight pressure may be employed in the application of the bandage with the limb in a horizontal position. The patient should take care to keep the affected limb horizontal or slightly elevated as much as possible, so as to encourage the flow of the blood toward the heart. Sometimes the dilation of the vein becomes so great that rupture occurs. In case of such an accident, the patient should at once elevate his limb as high as possible and place a small roll of cloth, as a folded pocket-handkerchief, over the point of rupture, applying strong pressure over the compress.

INFLAMMATION OF THE LYMPHATICS.

SYMPTOMS.—Enlargement of a lymphatic gland, forming a painful lump usually felt in the side of the neck, in the arm-pit, in the knee, or in the groin, from which may be seen radiating reddish lines having a cord-like feeling.

Causes.—A poisoned wound, as a scratch received while dissecting or making a post-mortem examination. Absorption from an ulcer or a malignant disease is a common cause of lymphatic enlargement.

Treatment.—Hot fomentations or warm compresses constitute the best treatment. It should be continued until the enlargement disappears or softens. When softening occurs, the part should be promptly lanced to evacuate the matter contained.

LEUCHÆMIA—WHITE BLOOD.

SYMPTOMS.—Fullness in the left side, due to enlargement of the spleen, or enlarged lymphatic glands; patient pale and weak; nosebleed or hemorrhage from the bowels; at last dropsy, fever, delirium or stupor, and death.

This is a peculiar disease which has been understood only within the last few years. The principal symptom of the disease, aside from those mentioned above, is an increase of white blood corpuscles. These little bodies, which naturally exist in the blood in the proportion of one hundred to three or four hundred of red-blood corpuscles, in this disease become increased to such an extent as to constitute from $\frac{1}{30}$ to $\frac{1}{6}$, and in extreme cases, shortly before death, even one-half of the whole number of blood corpuscles. In these extreme cases it is stated that the blood has a whitish appearance; and after death whitish clots are found in the heart and large blood-vessels looking like collections of pus.

Cause.—Nothing is known of the cause of this peculiar malady. It has been observed that it is always connected, either with enlargement of the spleen or of the lymphatic glands, from which it is supposed that the great increase in number of the white corpuscles is due to an excessive formation of these bodies by the glands naturally engaged in the blood-making process. There is also evidence that the increase of corpuscles is due to morbid activity in the connective tissue cells in various parts of the body. Cases often occur in which there is enlargement of both the spleen and the lymphatic glands. The spleen sometimes attains the size of seven or eight pounds. In a case of the disease which we met several years ago, the whole left side of the ab-

domen was filled by an enlarged spleen. Lymphatic tumors sometimes reach an enormous size. Enlargement of the spleen from malarial poisoning sometimes results in this disease.

Treatment.—It is fortunate that this disease is extremely rare, as it is equally difficult to cure. The remedies which have been most recommended have been quinine, iron, and preparations of iodine; but Prof. Niemeyer of Tübingen candidly remarks that by this mode of treatment "no case of recovery from Leuchæmia is known," and that in a case treated by him improvement took place under an opposite mode of treatment. He adds, "I afterward sent the patient to a wa-

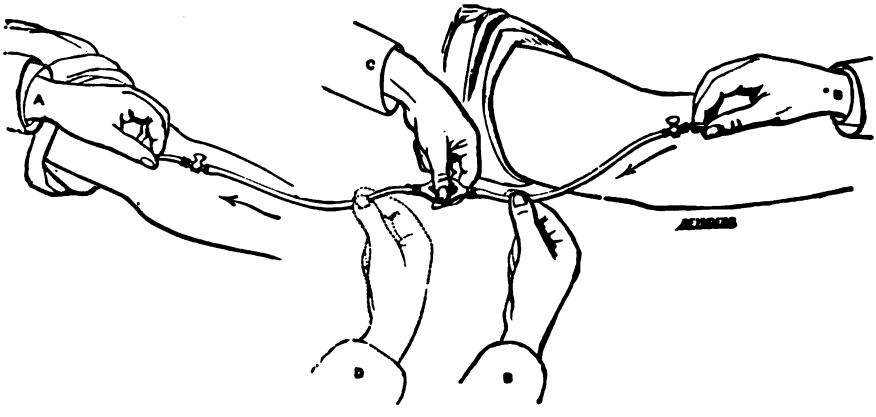


Fig. 317.

ter-cure establishment where he improved and became healthy looking." Even in this case, the disease returned after the lapse of a year or two, though it is possible it might have been held in check if the patient had continued under proper treatment. All sorts of experiments have been tried in the treatment of this disease. A few years ago, we met a man who had been suffering with the malady for two or three years. After having tried all sorts of remedies, he was at that time drinking warm beef blood every morning at one of the large abattoirs in New York. He had become so disgusted with the remedy, however, that he had made up his mind to abandon it, concluding that the disease with its consequences was to be preferred. Cases of recovery from this disease have been reported to have taken place in consequence of the operation of transfusion of blood. This operation consists in pumping into the veins of the patient a supply of healthy blood from another individual. The blood of the sheep is sometimes used

instead, but human blood is undoubtedly much more effective. The operation is usually performed upon the arm. Fig. 317 shows the simplest mode of procedure. In some cases the blood is drawn from the arm of the individual supplying it, and is deprived of its fibrine by whipping before being injected into the arm of the patient. This plan lessens the danger of formation of clots, but is less effective than the more direct method shown in the cut.

CYANOSIS—BLUE DISEASE.

SYMPTOMS.—Blue or purplish color of the skin, lips, and under the skin; coolness of the body; palpitation; shortness of breath; bulbous enlargement of tips of fingers and toes; incurved nails; dropsical symptoms.

Cause.—The cause of the peculiar coloration in this disease is some malformation of the heart or its large vessels, by means of which there is a mixture of arterial and venous blood so that the blood is not properly purified. One of the most common causes of malformation is failure of the *foramen ovale*, or the opening through the partition dividing the right and left auricle, to close after birth. This closure generally occurs within a short time after birth, preventing mixture of the blood of the two sides of the heart. When it remains open the individual becomes cyanotic. Sometimes other malformations occur, such as a transposition of the large arteries, the aorta arising from the right ventricle, and the pulmonary artery from the left, with various other deficiencies and abnormalities.

Transposition of the heart sometimes occurs. A few years ago we had a patient under treatment in whom the heart was found upon the right side, the liver being transposed to the left, and other internal organs, so far as could be ascertained, having undergone the same transposition. No inconvenience was suffered from the peculiarity, the heart apparently performing its function as well as when in its proper position.

Treatment.—Infants, born with the deficiences described, generally die very early. Sometimes, however, individuals affected in this way, have been known to reach advanced life. No special treatment is indicated, as the disease is of an incurable nature; but great care should be taken to protect the patient from all influences which will disturb the circulation in any way. The danger of taking cold should be especially avoided, with exposure to measles, whooping-cough, diphtheria, and all diseases which affect the respiratory organs.

DISEASES OF THE NERVOUS SYSTEM.

The notable increase in the frequency of nervous diseases in modern times gives to this class of affections an importance far greater than has been attached to them at any previous period in the history of the race. A century ago, the literature upon the subject of nervous diseases was comparatively a meager one; but at the present time, there is probably no class of affections which commands a larger share of the attention of medical authors than this. Ziemssen's encylopedia of medicine has four ponderous volumes devoted to the subject, and voluminous works on single diseases, or classes of diseases, of the nervous system are becoming very numerous.

The cause of the great increase of attention given to this subject is, without doubt, the great increase in the number and frequency of nervous disorders. The increasing tendency in this direction is a subject of marked concern on the part of many observing and reflecting physicians; and it is a matter of importance to consider briefly, at least, some of the causes which have led to this remarkable development of a special class of diseases in recent times.

Causes of Increased Frequency of Nervous Diseases.—First among the causes which have undoubtedly led to this state of things, may be mentioned the unnatural hurry and bustle of modern life, and the numerous sources of excitement and morbid nervous activity characteristic of our modern times. In business life, the sharp competition of trade is a continual goad to the man whose necessities or ambition leads him to desire pecuniary success. New means of producing various commodities must be invented, and new plans for creating a demand for the same must be devised, giving no opportunity for rest or recreation. In the haste to get rich, men forget the demands of physical law, and commit the grossest outrages against themselves, depriving their overwrought brains and nerves of the proper amount of sleep and necessary relaxation. The desire for speculation has extended till it is no longer confined to the larger centers of trade, but extends to the smallest towns and villages, and often to the most remote country districts.

The hope of amassing wealth suddenly, leads men to incur the risk of losing the results of the small accumulations of years; and while wait-

ing for the turn of the wheel controlled by fickle fortune's caprice, the mental and nervous strain often becomes so great that some of the delicate threads which form the network of this most intricate of all the bodily systems, are snapped asunder, so that pecuniary wealth is only secured at the expense of the most wretched physical poverty. Many times the nervous system, which has, from intense hope and anticipation of greatly desired results, been stimulated to the highest degree, is, by a reversal of prospects, subjected to such a sudden revulsion that the mental and nervous equilibrium is destroyed, perhaps never to be restored. But it is not only in the world of trade and commerce that these disasters occur. In the world of politics, the strain is equally great, and the damaging results of overexcitement may be seen with equal frequency.

So, too, in other departments in life. The scientist is continually taxed to the utmost limit by the endeavor to keep pace with the numerous discoveries and advances which rapidly succeed each other in every department of scientific investigation. The literary student is overwhelmed with the attempt to familiarize himself with even a small fraction of the modern literary productions of merit, to say nothing of the productions of by-gone ages. In social life, competition in dress and display through the desire for social distinction, together with the follies of fashionable dissipation, tell first and most powerfully upon the illy sustained nervous systems of the participants.

In a large number of cases, the foundation for chronic nervous diseases is laid in infancy and early childhood. The popular methods of education, well designated as "school cramming," pervert and overstrain the mental faculties and the nervous system of a large proportion of all who are subjected to the process of being educated. Children are sent to school at too early an age, are kept in school too long at a time and too many hours a day, and are stimulated in every possible manner to exert themselves to the utmost to accomplish in five or six years the mental work which a century ago was not accomplished in ten or twelve. The high schools of the present day present a much more extended curriculum of studies, and require of candidates for examination a degree of qualification far superior to the colleges and universities of the last century; yet it is expected that young men and women will complete their education at an age at which our great grandfathers would have considered themselves well advanced if fairly started.

Everything in modern times seems to be conducive to mental and

nervous overwork. Our railroads enable us to accomplish in a day journeys which would have required a week by the old-fashioned stage-coach. The telegraph and the still more recent telephone are rapidly supplanting the mail system, although in some States mails are carried with almost lightning speed by special trains, which load and unload their bags of letters without checking their speed, even renewing their supply of water in the same way.

Another powerfully acting cause, and, perhaps, one quite as important as any that has been mentioned, is the great and increasing prevalence of the use of various stimulating and narcotic drugs. Alcoholic intemperance produces a distinct class of nervous derangements. The same may be said of opium, of tobacco, and, as can now be clearly shown, of tea and coffee also. Dr. Richardson has lately called attention to the fact that chloral, a drug introduced into England by himself, has already come into such extensive use as to have given rise to a serious train of nervous disorders. Absinthe, hashish, and numerous other drugs, the habitual use of which has become more or less extensive, are also accountable for special disorders of the brain and nerves. The particular effects of these poisons have been more fully described elsewhere in this work.

Other injurious habits which are productive of nervous diseases may also be mentioned, as errors in diet, particularly the use of stimulating condiments and of food deficient in nutritive elements, as wheat, deprived of its nerve-nourishing elements, in the form of superfine flour bread; sedentary habits of life; late hours; deficiency of sleep; exciting entertainments; improper dress; novel-reading; sexual excesses and vices; want of control of the passions; all exhausting, depressing, and over-stimulating agencies.

Lastly, we may mention as a cause of the great increase of nervous diseases in modern times, *hereditary influences.* Nervous diseases of all kinds are much more frequent in the developing generation than in their parents. We have many times made the observation that the children of parents addicted to the use of tea and coffee, of tobacco or alcoholic liquors, suffer much more from the effects of these abuses, in various nervous derangements, than the individuals themselves. Through the influence of these hereditary causes, the "nervous temperament" is becoming much more frequent. This fact is true with reference to the severe forms of this disease, as well as those of milder character. The marked increase of insanity in civilized

countries, and the increasing frequency of what is now well recognized as the insane temperament, are evidences of the truth of this assertion.

The only remedies for this disastrous tendency, which if not checked is destined to increase with each succeeding generation, is a thorough revolution in nearly all of the habits and practices of modern civilized societies. How this might be accomplished, or whether a reform of such magnitude is possible, we will not here attempt to say.

PAIN.

Pain is one of the most common of all the symptoms manifested by the nervous system; yet it is impossible to frame a definition which will exactly describe it. Indeed, it is impossible to formulate a definition of pain which will distinguish it from pleasure, the opposite condition. Numerous attempts have been made by philosophers as well as physicians to describe this most common of all symptoms, but without success. Notwithstanding, this need not be considered so great a misfortune, since every one knows what it is, making a description unnecessary. We shall under this head, too, point out some of the principal kinds of pain, their significance, and the best methods of treatment to adopt for their relief. Pain has been classified as follows:—

Inflammatory Pain.—This is the pain of inflammation, but varies in character, according to the part affected and the intensity of morbid action, being sometimes sharp and lancinating, as in the pain of pleurisy, at other times throbbing, as in an abscess in which pus is forming, or dull and continuous, when inflammation is only moderate in intensity and considerable in extent.

Irritative Pain.—This is a pain which arises from some sort of irritation of a nerve. The irritation may be mechanical or chemical, or it may be due to causes too subtle to be discovered.

Reflex Pain.—This variety of pain is felt at some point remote from the location of the morbid condition which gives rise to it. We see illustrations of it in cases of headache, neuralgia, and tenderness of the spine which arises from disease of the uterus and ovaries in women, and in cases in which pain in various organs is excited by the irritation of worms in the intestinal canal.

Pain Originating in Nerve Centers.—This variety of pain is best illustrated by hysteria, a disease in which the difficulty undoubtedly exists chiefly in the nerve centers, although the exact nature of the diseased condition has not yet been fully made out. Neuralgia of the various parts of the body arising from tumors in the brain is also an example of this kind of pain.

Numerous kinds of pain have been described by various authors, as tingling pain, often referred to as "pins and needles," aching, smarting, burning, gnawing, rasping, throbbing, lancinating, dull, heavy, etc., and various other modifications of pain. It is hardly possible to attach to each of these different kinds of pain a definite significance. It may be remarked that, in general, acute smarting or lancinating pain is indicative of active congestion or inflammation, while a dull, heavy, continuous pain indicates passive congestion.

Causes.—Romberg has very well said, that pain is "the prayer of the nerve for healthy blood." Defective nutrition is undoubtedly the most common cause of pain. We often have very acute pain arising in consequence of a deficient supply of blood to the affected nerve. Congestion is also a frequent cause of pain, the distended blood-vessels subjecting the sensitive nerve fibres to an abnormal amount of pressure.

Treatment.—From the earliest ages there has been an earnest search for a universal panacea for pain. It is universally regarded as an enemy which should be contended against and subdued as quickly as possible. The physiologist, however, regards pain as a friend, since it gives warning of danger, and thus in many cases gives opportunity for averting the threatened calamity to the physical organism. Pain is a sentinel which stands on guard to protect the citadel of life. When the faithful sentinel is lulled to sleep by the devices of anæsthesia, a limb may be severed from the body and the most exquisitely sensitive organs may be subjected to violence without any remonstrance on the part of outraged nature. If anæsthesia were the natural condition, life could not long be maintained, for the body would soon be destroyed by the various destructive agents with which it comes in contact. In view of these facts it is evident that before seeking a remedy for the relief of pain in any particular case, the question should be asked, What is the nature and cause of the symptom? In the majority of cases the treatment should be applied not directly for the relief of the pain itself, but for the purpose of removing the cause upon which the pain depends. When this is done, the pain ceases of itself;

whereas, when the opposite course is taken, the sensibility to pain may be obtunded by depriving the nerves of their power of remonstrance while the cause still remains. As a general rule, the large class of drugs which are so extensively used for the relief of pain are utterly worthless as a means of cure, being simply temporary palliatives. In many instances, too, the very drug which relieves the pain temporarily, really increases the difficulty by paralyzing the efforts of nature to remove the morbid cause from which the pain arises.

Cold is generally the most efficacious remedy for the relief of pain when it is produced by active congestion or inflammation. Pain accompanied by a great amount of heat generally calls for the application of cold. Some cases of neuralgia are best relieved by ice or cold compresses. The best remedy for the relief of the pain of a felon before it reaches maturity is immersion of the hand and arm in water as cold as can be borne. Probably there is no one remedy of so universal application as a means of relieving pain as heat. It may be applied in connection with moisture by fomentations, or without, by means of bags filled with hot water, heated sand, corn meal, or some similar substance, hot bottles, bricks, etc. Either moist or dry heat is almost always efficacious in the pain of neuralgia. Pain arising from deficient circulation is also generally best relieved by hot applications. The pain of passive congestion yields to heat quicker than to any other remedy. The severe pain of a felon approaching maturity will often be relieved, as if by magic, by a hot spray or a fomentation. Uterine and ovarian pain are relieved by the hot vaginal douche. Bowel pains are relieved by hot fomentations and by large hot enemas. Severe nervous headache is often best relieved by fomentations or sponging the head with hot water. Fomentations to the bowels are most effective in sympathetic headache. The pain of rheumatism, acute sciatica, neuralgia, pleurodynia and pleurisy, yield best to hot applications. Excruciating pain arising from piles or a fissure of the anus may be often dissipated by sitting over a vessel nearly filled with very hot water. The terrible itching of pleuritis and the intolerable pain of earache and toothache also yield to the application of heat. The pain accompanying inflammation of the veins, and the extreme pain and soreness arising from bruises, lacerations, fractures of bones, and many other accidents, are relieved, generally, more readily by the application of heat than by any other means. The warm-blanket pack, and the Turkish, hot-air, vapor and Russian baths, are

the most effective means of applying heat. It can be utilized to the greatest advantage in the treatment of cases characterized by pain of a general character. Poultices of various sorts are generally no more effective than fomentations, in some cases less so. Their efficacy is wholly due in the majority of cases to the heat and moisture of the application.

Fig. 318. Hypodermic Syringe.

In exceptional cases, cold compresses will relieve the pains of rheumatism more effectively than heat. Iced water is also sometimes essential as a remedy for the relief of toothache. For congestive headache, ice compresses applied to the head and neck are the proper measures. The terrible pain of cancer may often be relieved by freezing when other remedies fail. This remedy also has the advantage in that it checks the progress of the disease as well as relieves the suffering. The injection of ice-cold water into the seat of pain sometimes relieves the severe pain of neuralgia almost magically. We have used it with fair success in a number of cases. Some recommend injection at the analogous part on the opposite side of the body. Injection is made

by means of the hypodermic syringe, the most approved form of which is shown in Fig. 318. Intense cold or freezing may often be used to advantage to prevent pain in the performance of slight surgical operations.

Electricity occupies a very important place as a remedy for the relief of pain. As a general rule, the galvanic current is more effective than the faradic, though the latter sometimes succeeds when the other fails. Electricity is the most useful in cases not characterized by inflammatory action. In congestion, it gives relief by causing contraction of the extended blood-vessels. As a general rule, the positive pole should be applied at the seat of pain while the negative sponge is placed near by, at some point below, or at the origin of the nerve of the part. We have often felt exceedingly gratified for the assistance given us by this remedy in relieving the pain of suffering patients.

Rubbing, gently stroking the part which is the seat of the active pain, will not infrequently secure prompt relief from suffering. This is especially true in the case of headache, pain in the joints, and in some cases of neuralgia and muscular rheumatism. Many popular liniments owe their efficacy almost wholly to the friction with which they are applied. It is well known that a liniment does no good unless it is well rubbed in. A remedy which many years ago was very popular for the relief of pain consisted wholly of olive-oil with the addition of a little beeswax. Gentle stroking of the head and spine will often give more complete relief in severe nervous headache and general nervous irritability than any other remedy which can be applied.

Rest and Position are also effective means of relieving pain in certain cases. Severe headache generally requires a recumbent posture. Pain and neuralgia also demand rest. Pain arising from inflammation in the extremities is generally relieved by elevation of the affected part. It is for this reason that the hand is carried in a sling when a person is suffering with a felon. Pain or chronic ulcer of the leg is also found to be relieved by elevation of the affected limb. Pressure also exercises a favorable influence upon pain in many cases, as seen in the beneficial effects derived from the rubber bandage and the elastic stocking in varicose veins of the limbs. A tight band about the head will sometimes relieve nervous headache when other means fail. Many persons who suffer with headache intuitively hold the head between the hands when the paroxysms of pain are severe.

Pressure upon the affected side of the chest in pleurisy is sometimes very effective in relieving the sharp pain which accompanies respiration in this disease. Pleurodynia also yields to pressure with equal facility.

Diet is in many instances a potent factor in the production of pain, and may be made equally effective in its relief. Abstinence from the use of flesh food will frequently relieve obstinate headaches and neuralgias, especially those arising from congestion. The terrible pain of aneurism of the chest may be relieved by abstaining from fluids as much as possible, so as to diminish the volume of the blood. The suffering from asthma and emphysema is greatly mitigated by the disuse of sugar, starch, butter, and other food elements which are likely to form gases. The pain of ulcer of the stomach may be avoided by resorting to feeding by means of the rectum. Severe pain in the kidneys and bladder is frequently relieved by copious water-drinking. The smarting, burning pain which follows urination when the urine is scanty and high-colored is generally very popularly relieved by this means.

Drugs are to be employed as little as possible for the purpose of securing relief from pain. One reason for this is that in general they do nothing toward removing the cause of the symptom. Another still more important reason is, that, being simply palliatives, a tolerance of their pernicious influence is soon acquired by the system, so that their effect cannot be obtained without steadily increasing the size of the dose. It is through this means that the majority of opium-eaters, hashish devotees, and chloral users are led into the fatal snare. As a general rule, too, the drug employed for the relief of pain when it is long-continued creates a disease often worse than that which it is attempting to cure. In cases of extreme suffering which are not relieved by any measures which have been mentioned, and especially in cases in which the pain is due to an acute cause, which can speedily be removed, or when the patient is suffering from a malady, the nature of which renders it incurable, opiates or any other drugs which will secure relief from suffering may be very properly employed, but should be used entirely under the supervision of a careful and intelligent physician. Nothing could be much more pernicious than the habit which many people have of keeping in the house some anodyne preparation, which generally contains more or less opium, in readiness for use on short notice, whenever any member of the

family may happen to have pain, no matter how trifling may be the degree of suffering. One of the greatest obstacles to be overcome in the treatment of opium-eaters is the lack of fortitude on the part of the patient, a condition which has been brought about by the constant yielding to the disposition to avoid pain, no matter of how slight a character. It is possible for a person to receive injury from the strain upon the nervous system, occasioned by severe pain, but as a general rule, much more injury is done the patient by the drugs employed for the relief of pain than would be occasioned by the pain itself. The drugs which are generally employed for relieving pain not only do not reach the real seat of the disease, but by their paralyzing effect upon the nerve centers, in some degree interfere with the restorative efforts of nature, thus putting a real obstacle in the way of recovery. Opium is especially damaging in this particular. It also has a well-recognized tendency to produce constipation of the bowels, inactivity of the liver, and, in fact, of all the other excretory organs, thus interfering with nutrition and producing a feverish condition of the system. It should be only resorted to as the last of all means for relieving pain. Belladonna, gelsemium, Indian hemp, and other allied remedies, are much to be preferred to opium, although they are somewhat less effective in action. Painful surfaces may frequently be relieved by the application of a solution of glycerine in water or by the employment of simple mucilaginous lotions of various kinds, as linseed tea, slippery-elm water, etc. A solution of tannin in glycerine of moderate strength is sometimes very effective as a means of relieving pain.

VERTIGO.

Dizziness may be the result of too much or too little blood in the brain. It is a very frequent symptom of indigestion, being often caused by gas in the stomach. By pressure of the distended stomach upon the aorta, it interferes with the circulation of the blood in the lower extremities and causes congestion of the head. The use of tobacco, tea and coffee, and alcohol, are frequent causes of severe, obstinate vertigo. This is especially true of tobacco. Exposure to great heat, either of the sun or other artificial sources, is a cause which is especially active in hot weather. Malaria sometimes produces vertigo. Loss of sleep, overwork, sexual excesses and abuses, and inhalation of impure air are very frequent causes. A few cases have been observed in which

most obstinate vertigo was produced by disease of the ear. It has also in some cases depended upon diseases affecting the heart, brain, spine, kidneys, liver, or sexual organs.

Treatment.—Attention to all the laws of hygiene, avoidance of the known causes, employment of a simple unstimulating diet comprising but a very small portion of meat, constitute the main essentials of the treatment of obstinate vertigo. When it is induced by congestion, a hot foot-bath should be employed with cold applications to the head, and the patient should sleep at night with his head elevated, and should avoid stooping. When the symptom is due to the opposite condition of the blood-vessels of the brain, or anæmia, the patient should remain in a horizontal position as much as possible, and should avoid rising suddenly from a recumbent or sitting posture. Upon the approach of an attack of vertigo, he should lie down at once, or bend the body forward with the head between the knees. Such other measures should be employed as are recommended for cerebral anæmia.

NERVOUSNESS.

This is a condition so exceedingly variable in character as to be very difficult of description, yet so common that few are unaware of its nature. It may perhaps be said to be a morbidly sensitive or irritable condition of the nervous system. A person who is nervous, is generally timid, being startled by the slightest noise or unusual circumstance. The unexpected appearance of a friend, the receipt of sudden news, or the occurrence of anything outside of the usual routine, is likely to occasion trembling and perhaps a considerable degree of prostration. Nervous people are generally harassed with apprehensions, and imaginary difficulties; the little annoyances of life, which in health pass unnoticed, appear in a greatly exaggerated light.

Irritability of temper, and a disposition to complain, find fault and scold, are among the features of nervousness. In some people it assumes a form which is sometimes termed fidgets. The patient is unable to sit still or remain in any one position for any considerable length of time. If he sits, he is constantly moving his feet and twisting about in his chair. If he stands talking to a friend, he changes his position every few seconds. When he goes to bed, he finds it difficult to lie still long enough to get asleep, and general restlessness and disquiet keep him in constant motion.

Nervousness is a symptom which accompanies a great variety of

diseases. Though generally looked upon as of trifling importance, it is really a difficulty worthy of serious attention. A person whose nervous system is in a healthy condition is never nervous. One of the most common causes of nervousness is some disorder of digestion. All forms of dyspepsia are characterized by nervousness of a greater or lesser degree; and in nervous dyspepsia it is one of the most prominent symptoms. An inactive condition of the liver, constipation of the bowels, and in females disease of the womb and ovaries, are morbid conditions in which nervousness is prominent. The use of tea, coffee, tobacco, and alcoholic liquors, are each and all responsible for a very large share of the nervousness which prevails at the present day Sedentary habits, novel-reading, loss of sleep, dissipation, sexual excesses, and all causes which depress the nervous system are causes of nervousness.

Treatment.—As nervousness is only a symptom, the first business of an individual suffering from it should be to ascertain its cause. When this is done, injurious influences should be at once removed, and in a majority of cases this is all that is required. When the difficulty depends upon some local or general disease, the morbid condition from which it arises should receive proper attention.

General tonic treatment, especially the use of electricity, massage, and tepid sponge baths, are among the best measures of treatment. Special attention should be given to the diet. It should be unstimulating in character, condiments of various kinds being wholly avoided. As a general rule, meat should be taken in very small quantities, the less, the better, provided the patient has an appetite for other food and is able to digest fruits and grains. A sufficient amount of exercise should be taken in the open air each day, and the patient should have abundant opportunity for rest and recreation.

NEURASTHENIA, OR NERVOUS EXHAUSTION.

SYMPTOMS.—Tenderness of the scalp; dilated pupils; headache; pain, pressure, and heaviness in the head; spots before the eyes; noises in the ears; irritability of temper; melancholy; fear of lightning, of solitude, of society, and other morbid fears; nervousness; peevishness; sleeplessness; bad dreams; morbid desire for stimulants; dryness of the skin; swelling of the hands and feet; tenderness of the spine, especially of the lower end; palpitation of the heart; excessive ticklishness; cold hands and feet; nervous chills; in some cases, great debility.

This disease includes a great variety of conditions which are closely related. Its real nature is a condition of the nervous sys-

tem in which there is a deficient development of nerve force. A patient suffering from neurasthenia may be either thin, pale, weak, or he may be fleshy, muscularly strong, florid, full-blooded. He may be suffering with either hyperæmia or anæmia of the brain, or may be free from either affection or liable to both conditions in alternation.

Neurasthenia is one of the most frequent of all nervous disorders. It occurs in all grades of society, but is much the more frequent among the more cultivated classes. It seems indeed to be rapidly increasing from year to year. Although it cannot be classed with such grave affections as softening of the brain and locomotor ataxia, it is deserving of serious attention, since it not infrequently leads to much more serious disorders, prominent among which may be mentioned the various forms of insanity. In some cases the brain is chiefly affected, while in others the spinal cord seems to be the principal seat of the disease. In still other cases both brain and spinal cord are equally affected.

Causes.—All the general causes of the nervous diseases mentioned at the beginning of this section are active in producing neurasthenia. Among the most important of these may be mentioned excessive mental work, especially when of an irksome or worrisome character, loss of sleep, sexual excesses, especially youthful indiscretions, errors in diet, especially the excessive use of meat and the use of stimulating condiments. Alcoholic liquors and tobacco are exceedingly active causes of neurasthenia in men, while the use of strong tea and coffee are equally active in producing the disease in the opposite sex.

The habitual use of opium, chloral, and other popular remedies for relieving pain and producing sleep, are exceedingly productive of neurasthenia. Any cause which diminishes nerve power by interfering with the nutrition of the nerves, or by occasioning an excessive expenditure of nerve force, may be regarded as a cause of neurasthenia.

Treatment.—Nearly all cases of neurasthenia are curable if the proper conditions and treatment can be supplied; the majority of cases will recover in time with the simple abandonment of all the causes, and careful attention to hygienic measures. When the brain is the chief seat of the malady, the patient will generally be benefited by taking a large amount of exercise in the open air. In cases in which the spine is the seat of the difficulty, equal attention should be given to securing rest. Overexertion and fatigue should be carefully avoided. In the latter class of cases, the diet should be abundant and nu-

tritious, but unstimulating. The best authorities are agreed that a fruit and grain diet is much to be preferred to a flesh diet for neurasthenic patients. In regulating the diet, of course the conditions of the digestive organs must be taken into consideration. As a general thing, the patient may be allowed to take milk quite freely. In some cases milk is especially to be recommended as the chief article of diet. Sweet cream, when it agrees well with the stomach, is an excellent article of food for patients suffering with nervous exhaustion. If the patient is full-blooded and fleshy, a wet-sheet pack, vapor or hot-water bath once or twice a week will be advantageous. When the opposite condition exists, all kinds of reducing treatment should be avoided.

Frequent tepid sponge baths, either with pure water or with a teaspoonful of salt to the pint, is a valuable tonic measure. In most cases a sponge bath can be taken daily with benefit.

Faradization (p. 693), and central galvanization, are among the most valuable of all remedial measures. Alternate hot and cold applications to the spine, ice packs of brief duration, and fomentations applied from the spine over the region of the stomach and liver and other painful points, are measures which we have used in many cases with very great success.

It is important to have the thorough co-operation of the patient. It is necessary that his entire confidence should be enlisted. Faith, hope, and will-power will do much toward securing recovery, no matter what remedies are employed. We have seen patients suffering with nervous debility gain rapidly when taking daily a single drop of medicine, the only property of which was a very bad taste, and without any other treatment; but the element of faith was strongly enlisted, and thus excellent results were secured through mental influence alone. A lengthy course of treatment is required in some cases on account of the obstinate character of the conditions on which the nervous debility depends. The measures of treatment which have been recommended should be perseveringly employed, however, and in a great majority of cases success will be attained at last.

CONGESTION, OR HYPERÆMIA OF THE BRAIN.

SYMPTOMS.—ACTIVE: *Wakefulness, or troubled, unrefreshing sleep; bad dreams, confusion of mind, with loss of power of concentration of thought; loss of memory, especially of names; unintentional neglect of most important matters; fullness of the head, headache; sensation of a tight band about the head, with various other strange and peculiar sensations; frequent flushing of the face and throbbing of the arteries of the neck and temples; despondency; morbid fears; peevishness and great restlessness, morbid sensitiveness; dizziness; roaring or other noises in the ears; dread of loud sounds; disturbance of vision by flashes of light, or black spots before the eyes; eyes often red, watery, and sensitive to the light; twitching of the muscles of the face, particularly of the eyelids and corners of the mouth; twitching and cramps in other muscles of the body; in many cases slight difficulty in the pronouncing of certain words or syllables, especially when fatigued; thickness of speech; extremities feel large and awkward; pulse usually slow and full; digestion slow and imperfect; bowels constipated; urine scanty and dark colored.*

PASSIVE: *Symptoms mostly the same as above, or less marked; drowsiness and unnatural stupor are prominent symptoms.*

Hyperæmia of the brain is a much more frequent disease than is generally supposed; in fact, it is probably the most common of all nervous disorders. The failure to recognize this affection in its early stages not infrequently results, from a neglect of proper treatment, in much more serious and frequently incurable disease. There is good reason for believing, also, that this disease in its severer forms is not infrequently mistaken for insanity, patients being confined in lunatic asylums in consequence of temporary mental derangement wholly due to a congestion of the brain, which would readily yield to simple rest, seclusion from exciting causes, and a proper plan of treatment. The symptoms given above are chiefly those which appear in the simpler forms of the disease and in its earlier stages. If the malady is not checked, much more serious results ultimately occur. Among the principal of these are apoplexy, epilepsy, convulsions and insanity.

Causes.—Active congestion is produced by any cause which occasions the flow of a large quantity of blood to the head. Passive congestion is occasioned by all causes which interfere with the return of the venous blood from the brain. Among the principal causes of active congestion may be mentioned mental overwork, loss of sleep, excessive mental anxiety, and the use of alcoholic liquors, opium, quinine, belladonna, and various other drugs; also certain articles of diet, particularly excessive quantities of animal food, and stimulating condiments, as mustard, spices, pepper, etc. Overeating and eating too fast, by producing

disorders of digestion, are frequent causes of active congestion of the brain. Constipation of the bowels is also a frequent cause, not only by exciting a feverish condition of the circulation, but by occasioning severe straining at stool. Exposure to the rays of the sun in hot weather or to excessive heat at any time when fatigued, frequently produces most severe active congestion. Passive congestion is occasioned by any constriction about the neck, as a tight collar or cravat, by the pressure of the large thyroid gland as in goitre, by tight lacing, and by many of the causes already mentioned. Both active and passive congestion are produced by the various forms of heart disease. Both active and passive congestion are frequently met with in cases of long-standing affections of the stomach, liver, lungs, and other internal organs. Uterine disease is a very frequent cause of cerebral congestion in women.

Treatment.—The sufferer from congestion of the brain should carefully ascertain the cause of the disease, and should then, without delay, change his habits and mode of life, so as to secure the most complete avoidance of all exciting causes. If he is actively engaged in business, he should, if possible, take a journey, leaving all his cares behind. If, however, this cannot be done, or if the case has reached so severe a stage that a journey would be impracticable, the most complete relief from care and seclusion from exciting causes should be secured at home, and an energetic course of treatment should be pursued. One of the most efficient measures for active congestion is the application of ice and cold compresses to the whole head, or to the nape of the neck. Applications should be made once or twice a day, and should be continued from half an hour to an hour at a time. In most cases the cool applications to the head should be accompanied by the hot leg or sitz bath. Wearing of the wet head-cap continually, night and day, for a few weeks is another useful measure. The hot-air bath, wet-sheet pack, rubbing wet-sheet, and the half bath, are also excellent measures. The hot half bath may be used daily to great advantage. Other baths, in case the patient is quite strong, may be used daily for a time, then every other day. In less vigorous patients, such vigorous treatment as packs and hot-air baths should not be employed more often than two to four times a week.

Persons suffering from passive congestion require less vigorous treatment than those suffering with the active form of the disease. In the majority of cases, the proper indications in passive congestion are such as will have a tendency to remove the cause of obstruction to the return

of the blood to the head. We have frequently obtained better results by the employment of hot fomentations to the back of the neck, or between the shoulders, with cold applications applied to the top of the head, than by the use of cold alone.

Galvanism may also be applied with excellent effect in many cases. The best methods of application are as follows: 1. Place the positive pole at the base of the head, and the negative pole upon the spine, six or eight inches below; 2. Place the poles of the battery upon the bony prominences just behind the ears, thus passing the current through the head; 3. Apply the current by the method known as central galvanziation, in which the negative pole is placed at the pit of the stomach, and the positive at the top of the head—the hair being moistened—the latter, after one or two minutes, being applied to the sides of the neck and the spine.

Sleeplessness is best relieved by the wet head-cap, continuous compress, or cold-water bag applied to the head, and the hot foot-bath, taken at night just before retiring. In many cases, these measures are greatly aided by the application of fomentations over the stomach, and wearing of a wet bandage about the bowels at night. The patient should sleep with his head elevated. In many cases it is better to elevate the head of the bed than to bolster the patient up with pillows. When the bowels are constipated, great care should be taken to keep them open by means of enemas, if necessary. Laxative drugs should not be taken if their use can possibly be avoided; and cases are very rare in which they are really required.

Great care should be bestowed upon the diet, which should consist almost wholly of fruits and grains. The patient should take neither coffee, tea, nor alchoholic liquors of any kind. Tobacco in all forms should be discarded. Stimulating condiments should also be disused. The diet should be made as simple as possible, and the patient should use great care to avoid overeating and to masticate his food thoroughly. When the patient is troubled with acidity, gas, and heart-burn, great benefit may be derived by the use of pulverized charcoal after each meal. We frequently use a mixture of one part of pepsin with three of charcoal with excellent effect. The patient may take from half a teaspoonful to a teaspoonful of the charcoal half an hour after eating. The use of charcoal crackers is also advantageous. Other symptoms of indigestion should be treated according to directions given elsewhere.

ANÆMIA OF THE BRAIN.

SYMPTOMS.—ACUTE: *Fainting; pallor; dilated pupils; pulse weak, frequent and threadlike; sighing respiration; cold extremities.*

CHRONIC: *Vertigo; especially on rising from a lying or sitting posture; headache, epecially at the top or back part of the head, often confined to a small spot; ringing in the ears; great sensitiveness to noise; in many cases, drowsiness in day time, wakefulness at night; pain in head and eyes, excited by reading; pupils dilated; eyes sensitive to light; nausea and vomiting, sometimes convulsions; great debility; pulse weak, either slow or frequent; palpitation of the heart; symptoms of dyspepsia.*

The symptoms of anæmia of the brain frequently resemble so closely those of the opposite condition that the two may be easily confounded. The mistake need not be made, however, if attention is given to the causes by which the condition has been produced. It should also be observed that one of the conditions is usually relieved by measures which aggravate the other; for example, active congestion is aggravated by lying down or stooping forward, while in anæmia the symptoms are aggravated by rising up and are often wholly relieved while the patient remains in the horizontal position. The dilated pupil of anæmia is also a characteristic symptom, the pupil being contracted in congestion.

Causes.—Anæmia of the brain is most common in women, as congestion of the brain is most frequently met with in men. One of the most common causes of anæmia is loss of blood from hemorrhoids; excessive flowing at menstruation, or in child-birth, particularly in miscarriage, and abortions. It may also be occasioned by hemorrhage from the nose, by great loss of blood in surgical operations or by accidental hemorrhages. Among other causes may be mentioned exposure to cold; poor food; the use of tobacco; excessive mental work; lack of exercise in the open air; dyspepsia; sexual excesses, especially secret vice; seminal losses; and uterine disorders.

Treatment.—The essential or most important measures of treatment, are those which will improve the patient's general nutrition. He should take a very nourishing diet, which may include, with advantage in some cases, a considerable proportion of animal food, especially if the digestive organs are somewhat weak. Abundance of sleep should be taken, and the patient should ride out in the open air and sunshine daily, and take other gentle exercises. Care should be taken, however, to avoid much exercise, and the patient should, for a time at least, spend the larger share of the twenty-four hours in a horizontal position. A considerable amount of mental exercise may be taken to advantage after

quite a degree of improvement has been secured, except in a few cases in which the affection is the result of mental overwork. The employment of massage, inunction, and applications of electricity to the spine, etc., are beneficial. Advantage will also be derived from the use of a very mild galvanic current, passed through the head by placing the two poles upon the bony prominences behind the ears.

APOPLEXY.

SYMPTOMS.—WARNING: *A sensation of weight and fullness in the head; headache and dizziness, especially on stooping; noises in the ears; sometimes temporary deafness; blindness or double vision; frequent nosebleed; nausea; numbness in limbs, especially on one side; incoherent remarks; thickness of speech; drowsiness or stupor; partial paralysis, affecting the face, eyelids or the limbs; heaviness or stiffness in the limbs; slow and irregular pulse; irritability of temper.*

MODE OF ATTACK: *May begin in three ways. 1. The patient falls suddenly, unconscious and motionless; face flushed; appearance of deep sleep with snoring; pulse full and slow; sometimes convulsions or rigid contraction of the muscles. 2. Sudden pain in the head; faintness; pallor; nausea; sometimes vomiting; sometimes patient falls unconscious; in other cases only slight loss of consciousness, patient suffers with headache and gradually becomes dull, stupid, and finally unconscious. 3. Sudden paralysis of one side; loss of motion but not of consciousness; may come on during sleep, the patient finding one side paralyzed on awakening.*

DURING ATTACK: *Partial or complete unconsciousness; pulse small at first, generally becomes full and strong and usually slow; sometimes interrupted; respiration slow and snoring; froth about the mouth; cold clammy sweat; face pale; eyes dull and staring, usually looking away from paralyzed side; one or both pupils dilated; teeth set.*

Apoplexy is a quite common cause of death, though probably not so common as it is sometimes thought, as many of the deaths attributed to apoplexy are really due to some other cause, particularly disease of the heart. The symptoms described vary in different cases, according to the immediate causes from which they rise and the particular part of the brain affected. In the worst cases of apoplexy the injury to the brain consists in the rupture of a blood-vessel, a clot being formed in the brain-substance by means of which the function of the affected part is destroyed. In some cases the clot formed is so large, and the consequent injury is so great, that instant death occurs. In other cases, death results after a considerable lapse of time through the suspension of certain important functions. In still other cases, death is occasioned by the inflammation itself set up about the clot, which acts as a foreign body in the brain. This inflammation generally begins within from two to eight days after the attack occurs. The milder attacks of apoplexy are occa-

sioned by the formation of a very small clot or by a sort of concussion of the brain due to sudden and extreme congestion. Cases also occur in which part of the brain becomes suddenly disabled by the blocking up of an artery with a small clot which usually comes from the heart. This is termed embolism.

The symptoms of inflammation sometimes resulting from the formation of a clot are pain and heaviness in the head, delirium, contraction of the paralyzed limb, especially affecting the flexor muscles, congestion of the face, elevation of the temperature with decrease of the frequency of the pulse and respiration. The apoplectic attack may last two or three hours or several days. It finally terminates in one of three ways. It may gradually pass off within a short time, leaving the patient well or nearly so. It may end in partial recovery, the mind remaining somewhat impaired and some parts of the body paralyzed; or it may terminate in death. In the majority of cases there is more or less loss of sensation as well as power of motion in the affected parts. Sensibility returns quite early, however, even when muscular paralysis remains.

Among the symptoms which remain in severe cases after the acute attack is over may be mentioned the following: Paralysis of the limbs, usually affecting the side of the body opposite the point of injury in the brain; that is, if the injury to the brain occurs upon the left side, the paralysis will be upon the right side. The opposite of this is true, however, respecting the muscles of the face. The extensor muscles, or those upon the outer side of the limbs, are generally affected the most seriously. The result of this is contraction of the flexor muscles, which cause various distortions, such as closing of the hand, drawing of the arm toward the opposite side of the body, etc. The arms are generally affected more than the legs; the lower extremities generally recover the most rapidly. According to Trousseau, when the opposite of this is true, the improvement is only temporary, and the patient is almost certain to die within a short time. Paralysis of the tongue is shown by divergence of the organ from the direct line when it is protruded. In severe cases it is protruded with difficulty, and turns toward the paralyzed side. The disturbances of sensation are not always complete paralysis, sometimes being the loss of natural sensibility which is replaced by peculiar sensations, one of the most common of which is that of ants crawling on the skin. This is known as formication. Sight and hearing are sometimes seriously affected. Mental disturbances, sometimes severe, at other times very slight, are generally more or less prominent, being

shown in feebleness of intellect, loss of memory, stupidity, childishness, peevishness, irritability, inclination to weep. Sometimes there is gradual loss of intelligence, resulting in imbecility. Insanity rarely occurs. A very common result is loss of memory of words. The patient seems to be able to think correctly but cannot remember the names of objects. If the name is spoken, he will usually recognize it, but cannot speak the word himself when he wishes, though he may be able to repeat it when he hears it spoken. Numerous examinations after death have shown that in these cases there is an injury of a certain portion of the brain upon the left side which is believed to be, in view of the facts stated, the organ of language. Bed-sores sometimes occur upon the paralyzed side within a few days after the attack. Swelling of the joints is also an occasional result.

A person who has had one attack of apoplexy is more liable to another than if he had not had the first attack, and the liability increases with the number of attacks; but the popular supposition that the third is necessarily fatal is an error.

When the person falls in a fit of unconsciousness, it is sometimes difficult to determine whether he is suffering with apoplexy or with some other affection. In some cases, it is impossible to determine at first the real nature of the attack. The flushing of the face, and the slow, full pulse, will generally distinguish apoplexy from fainting, or syncope. The thermometer also furnishes a means for distinguishing it from deep intoxication, as in apoplexy the temperature is always higher than natural, while in a person who is dead drunk, it is a little below the normal standard.

Causes.—Apoplexy occurs more often in males than in females. With respect to age, the disease is rare before twenty-two years, and increases in frequency with the increase of age from twenty-two years upward. It occurs most often during the cold season of the year, and according to the observations of Sarmani the hours from three to five o'clock in the afternoon, and two to four in the morning, are those in which the greatest number of cases occur. A very important predisposing cause of the disease is a weakening of the arteries of the brain. This is very likely to take place in old age. It is also a very frequent result of the use of alcoholic liquors. The tendency to this disease seems also to be hereditary, although the idea which once prevailed that persons with large heads, short thick necks, prominent abdomens, and a tendency, to accumulate flesh, are particularly liable to this affection, is erroneous

since careful observations show that persons quite the opposite in the particulars mentioned are equally liable. Among the exciting causes may be mentioned, the use of opium, alcoholic liquors, and other stimulants and narcotics; overeating, and the use of stimulating and indigestible food; excessive joy, rage, terror, and other strong mental emotions; great physical exertion; straining at stool induced by constipation; sexual excesses, especially in persons over fifty; tight clothing about the neck; tight-lacing; severe vomiting; hard coughing or sneezing; immoderate laughter; exposure to great heat; prolonged hot baths; cold bathing and heart disease.

Treatment.—We will consider the treatment of this affection under four separate heads as follows:—

1. *Preventive Treatment.*—This consists chiefly in the careful avoidance of all the known exciting causes of the affection. The predisposing causes should also be avoided as far as possible. A person who has an hereditary tendency to the disease should exercise especial care, and avoid every exciting cause, and should especially abstain from the use of all kinds of stimulating food. Flesh diet is especially injurious for such persons. The diet should consist almost wholly of fruits and grains. Milk may be used freely, but eggs and fish should be used only in moderation. Tobacco, alcohol, tea, and coffee should be utterly discarded.

2. *Treatment During the Attack.*—When a patient falls in an apoplectic attack, or is found in a state of unconsciousness exhibiting symptoms of such an attack, energetic measures should be employed at once. To relieve the pressure of blood in the head, ice should be freely applied all about the head, the head being first thoroughly wetted with ice water so as to secure an immediate effect. The shirt collar should be unbuttoned and all clothing about the neck loosened. The head should be raised and the extremities and other parts of the body thoroughly warmed by the application of artificial heat by means of hot bottles, jugs or rubber bags filled with hot water, heated bricks, bags of heated sand or salt, etc.

If the attack is the result of overeating, having followed a heavy meal, an emetic should be given with a large quantity of warm water, so as to prevent violent efforts in vomiting. If the patient does not vomit readily, vomiting may often be induced by tickling the throat with the finger or a feather. Bleeding, a measure so often practiced in apoplexy, is of very doubtful necessity. Trousseau remarks with refer-

ence to bleeding, "No physician, however, thinks of bleeding for the extravasation of blood under the skin, for he knows how perfectly absurd such a practice would be, and would excite an adverse reaction. There is no difference between it and the cerebral clot."

Dr. Hammond says, "I have never bled a patient for cerebral hemorrhage since 1849, and I am sure that I have had no reason to regret the abandonment of the practice." If the bowels are constipated, they should be relieved by a large, warm-water enema. If water alone is not effective, strong soap-suds may be employed, or a little extract of senna may be added to the water used. The routine practice of giving a cathartic at once is to be condemned.

3. Treatment Immediately After the Attack.—Put the patient in a quiet room. Give him a good nurse and exclude all visitors. Continue the application of cold compresses or ice to the head until the danger of inflammation is past, which will be after seven or eight days; keep the extremities well warmed; relieve the bowels daily or every other day by the use of the enema. If the bladder is paralyzed, the urine should be drawn with a catheter two or three times a day. It should be recollected that in some cases when the bladder is paralyzed there will be continual dribbling of urine. The patient's diet should consist of simple, easily digested food, as milk, oatmeal porridge, simple soups, etc. Rich, stimulating food, especially meat and fats of all kinds, should be strictly prohibited. In case the patient is unconscious and unable to swallow food, he should be nourished by means of nutritive solutions injected into the bowels. See "Nutritive Injections," page 737.

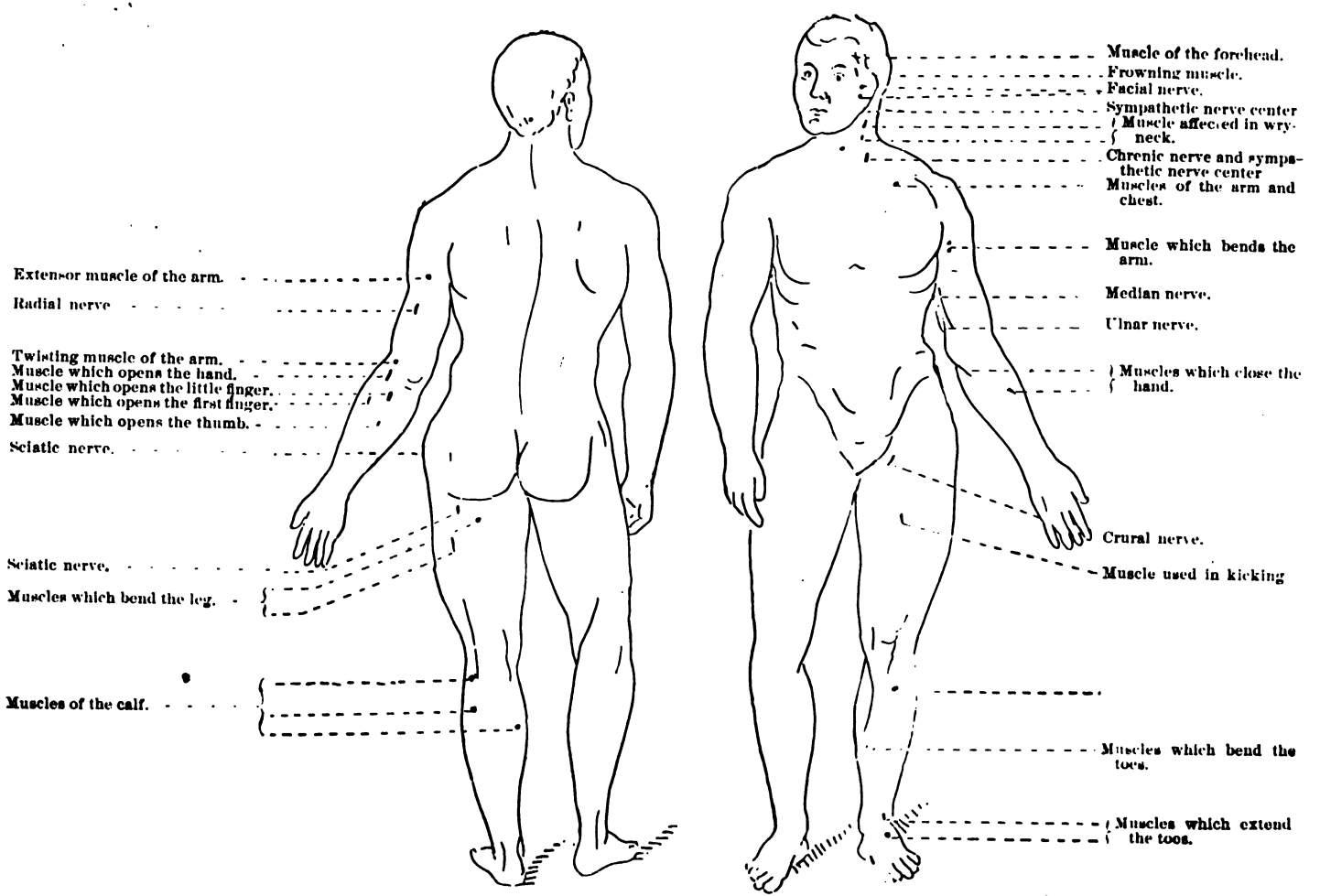
If the fever rises quite high, sponge baths or cool compresses about the trunk of the body should be used as in fever from any other cause. A cool enema taken at a temperature of 65° to 80° is a very excellent means of reducing the temperature in these cases. These measures should be employed whenever marked evidences of fever make their appearance. The use of blisters applied to the wrists, ankles, and calves of the legs, are in the highest degree absurd. The application of the blister to the back of the neck is also of very questionable propriety. Bed sores should be treated by means of alternate hot and cold sponging applied for 20 or 30 minutes twice a day. They should be covered during the intervals with oiled silk or gutta-percha tissue, smeared with vaseline containing ten drops of carbolic acid to the ounce. See also "Bed-Sores" in section devoted to surgery.

4. *Treatment of the After-Results.*—We consider it specially important that the public should be rendered intelligent respecting this part of the treatment of this disease, as a large share of the cases of paralysis of long standing might have been cured quite rapidly if the proper treatment had been applied at the proper time. No active measures should be employed so long as there are evidences of irritation of the brain or danger from inflammation. By the end of two or three weeks, however, if the patient still remains paralyzed, systematic efforts should be begun, to enable him, so far as possible, to regain the use of his limbs and to prevent deformity. These measures consist, at first, in daily bending and manipulation of the affected limbs. All the joints should be moved to prevent stiffening, and the limbs should be manipulated thoroughly so as to secure a vigorous circulation. Movements described in Figs. 250–266, in the section devoted to "Medical Gymnastics," are particularly adapted to these cases. It is also important that the patient should be required to move his limbs by his own effort as much as possible without too great fatigue. If he is unable to do this, he should be required to make an effort to perform the motion given to the limb by the attendant. The effect will be much the same as if he moved the limb himself with a little help, though he really takes no part in it. This point is quite an important one, as, in many cases, the patient remains paralyzed after the nervous connection which has been interrupted is fully restored, simply from want of voluntary control which has been lost through the long disuse of the affected part. The only way in which this difficulty can be overcome is by the plan suggested. The movements should be applied only five or ten minutes each day at first, but can be gradually increased to fifteen or twenty minutes twice a day.

Electricity is an invaluable remedy in the treatment of paralysis. By means of this agent the paralyzed muscles may be made to contract the same as though controlled by the will. Electricity may be applied in various ways. The most effective modes of application, however, are general and local faradization. For general directions for the use of electricity, see pages 693–703. Most of the paralyzed muscles may be made to contract by passing rapidly over them a large sponge electrode, using a current sufficiently strong to produce slight pain or contraction of the muscles. In some cases, however, it is necessary to apply the electric current in a more precise manner by local faradization. This is particularly necessary in a case of long standing

in which the muscles do not easily respond to the stimulation of the electricity. In these cases, one pole of the battery should be placed in the foot bath in which the feet are also placed, while the other is applied successively to the various points indicated by dots in Figs. 319 and 320. The nerves which control the various muscles of the body are most easily affected at these points. In some cases of paralysis of very long standing, the muscles will not respond to the faradic current until after a more or less prolonged course of treatment. Electricity may also be administered with great advantage by means of the electro-thermal and the electro-vapor baths. When there is a great loss of sensation, it is sometimes necessary to apply electricity by means of a wire brush passed over the skin after it has been thoroughly dried.

Mechanical movements of various sorts, or movements administered by machinery, are in many cases very useful. Baths of various kinds are also of very great advantage, especially daily sponging of the body with tepid water or salt and water. Sponging of the surface of the affected parts with water as hot as can be borne is a very excellent means of restoring lost sensibility. Alternate hot and cold rubbing, employing extremes of temperature as great as can be borne without discomfort, is also a very useful measure. The application of fomentations daily, or every other day, and daily manipulation or kneading of the bowels, is a very good means of restoring the activity of the intestinal canal and relieving constipation. When the skin is dry, inunction with vaseline should be employed two or three times a week. Every possible means should be employed to improve the patient's general nutrition. The diet should be nourishing and unstimulating. The less animal fats and condiments that are taken the better. The patient should be got out into the open air and sunshine as much as possible, and, when practicable, should be given daily sun-baths. Notwithstanding the employment of all the most approved remedial agencies, the most of cases will improve very slowly. Some will make very little improvement. A few will be restored to perfect health, but all, or at least nearly all, cases may be benefited more or less. Even though little improvement should be seen for several weeks, or even months, treatment should be patiently continued with unrelaxing thoroughness, as most remarkable results have often been obtained even when all efforts have seemed to be fruitless for several months. We have treated many cases of paralysis, and have sometimes seen patients recover in a few weeks, while other cases have required as many months to accomplish even a small amount of improvement.



Figs. 319 and 320, showing points at which electricity should be applied to affect special nerves and muscles.

SUN-STROKE.

SYMPTOMS.—Sudden pain in the head; fullness and pressure at the pit of the stomach; sometimes nausea and vomiting; weakness, especially in the legs; dizziness; sight dim and indistinct; objects appear of one color, usually blue or purple; sometimes convulsions or delirium; insensibility; stupor; snoring or moaning respiration; pulse frequent and weak; skin dry and hot.

Causes.—The affection known as sun-stroke is produced not only by exposure to the sun's rays, but by exposure to great heat from any source. Persons employed in glass-works, laundries, and in similar occupations, are subject to sun-stroke or heat-stroke, as well as those who are exposed to the sun's rays. It generally occurs, also, in persons who are debilitated by great fatigue, or who have ceased to perspire. The affection is much more frequent in persons who are addicted to alcoholic stimulants than in others.

Treatment.—When a person falls with sun-stroke, he should at once be carried to a cool, shady place. His clothing should be removed and cold applications should be made to his head and over the whole body. Pieces of ice may be packed around the head, or cold water may be poured upon the body from a water pot. The shower pack, described on page 644, is by far the best remedy known for this affection. The great source of danger is the high temperature, which sometimes rises as high as 110 degrees. In addition to the measures suggested, the ice pack to the spine, and the cold enema, may also be employed. In many cases, complete recovery does not take place, the patient remaining more or less subject to some of the symptoms which follow immediately after the attack.

BRAIN FEVER.

SYMPTOMS.—ACUTE: *Fever; sometimes chill and convulsions; pulse hard and rapid; vomiting; constipation; severe headache, which is aggravated by light and noise; alternate pallor and flushing of the face; eyes red and staring; pupils dilated; delirium; patient cross-eyed; restlessness; muscles twitching; after three or four days, less fever; slow pulse; pupils dilated; stupor.*

CHRONIC: *Symptoms obscure; little or no fever; dullness; change of the disposition; paralysis in some cases; headache and impairment of the mind, following an injury to the head.*

Under the head of brain fever we have included two affections, known as simple meningitis, or inflammation of the membranes of the brain, and cerebritis, or inflammation of the brain substance. Our reason for doing this is that the symptoms of the two affections are

so near alike that it is often difficult or impossible for the most careful physician to distinguish between them; in fact, in many cases, both affections occur at the same time, thus making the two diseases one. Another form of inflammation of the brain, known as tubercular meningitis, is considered separately. Brain fever sometimes begins very insidiously, the symptoms not being at first sufficiently marked to attract serious attention, so that in many cases the real nature of the difficulty is not understood until the patient has reached an almost hopeless condition. This is especially true of chronic inflammation of the brain, the final result of which is frequently the formation of an abscess. Brain fever beginning thus gradually has frequently been mistaken for insanity, and patients have been taken to an insane asylum instead of receiving proper treatment.

Causes.—The causes of inflammation of the brain are not very well understood, as many cases occur which cannot be traced to any distinct cause. It is known, however, that inflammation of the brain may be excited by blows upon the head, by exposure to the heat of the sun, and by the use of alcoholic drinks.

Treatment.—The essentials of treatment are keeping the patient very quiet in a dark room, and applying cold to the head by means of cloths wrung out of iced water; or, ice compresses. In severe cases, the hair should be cut very close, so as to allow of the more complete cooling of the head. Only the most bland and unstimulating food should be taken, and it should be given cold. The cold enema is a very excellent measure of treatment in this and other affections characterized by high fever. In the second stage of the disease, when the pulse becomes slow, the pupils dilated, and the patient dull or stupid, in consequence of effusion into the brain, the treatment should be such as will have a tendency to produce absorption. This can seldom be accomplished, but it will be worth while to make a trial of alternate hot and cold applications to the base of the skull in conjunction with the other measures described.

SOFTENING OF THE BRAIN.

SYMPTOMS.—Pain in the head; dizziness; impairment of intellect; drowsiness; despondency; slow and hesitating speech; loss of speech; prickling and twitching of the limbs; sight and hearing impaired; appetite good; tendency to accumulate flesh; in advanced stages of the disease, sometimes partial paralysis; weak pulse; vomiting; snoring breathing; unconsciousness.

In softening of the cerebellum, usually pain at the back of the head; dimness of vision; paralysis; tottering gait; tendency to walk backwards; dizziness; dullness of hearing.

Causes. Softening of the brain may result from inflammation, from the cutting off of the supply of blood by an apoplectic clot, or by injury to the skull by a severe blow. It is most likely to occur in old age We have seen some cases in young men, in whom it was due to self-abuse. It is also produced by the use of alcoholic liquors, and by exposure to intense cold. Excessive brain work has been put down as one of the chief causes of the disease, probably on account of its frequent occurrence in persons who do a great deal of brain labor. We think, however, that this is a mistake. It is more probable that in these cases it is due to sedentary habits and errors in diet, two causes which act together to produce congestion of the brain, and defective nutrition of the organ.

Softening of the brain is by no means so common an affection as is generally supposed. A large share of the cases of so-called softening, are simply active or passive congestion, which in many cases, results from sedentary habits and abuse of the stomach. The real disease is a very formidable one, and is seldom if ever cured.

INDURATION, OR HARDENING OF THE BRAIN.

SYMPTOMS.—Shooting pain in the head; trembling of the upper or lower limbs, or of the head, dizziness, melancholy; epileptic convulsions; paralysis occurring in different parts of the body; loss of the sense of touch at the ends of the fingers or toes without the loss of the sense of pain; dimness of vision; impairment of hearing; a stooping attitude; a jog-trot gait.

There are two forms of induration of the brain; in one, the whole brain is affected uniformly; in the other the induration occurs at scattered points through the brain. The symptoms of the first variety of the affection are so nearly like those of softening of the brain, that they cannot be distinguished. The symptoms of the second variety, or what is called *multiple cerebral sclerosis*, are those given above. In many cases both the brain and the spinal cord are affected. The disease is quite rare, though we have met with a few cases.

Causes.—This serious affection is attributed to excessive mental strain, long-continued loss of sleep, alcohol, and syphilis. The last two causes mentioned are undoubtedly the most common of all. The hardening effect of alcohol upon the brain and all other soft tissues, is shown by the immersion of the tissues of a dead animal in spirits for a few days. It is well known that when alcohol is received into the system, the brain receives the largest quantity of any organ except

the liver. In cases in which persons have died in a drunken fit, the fluid found in the ventricles of the brain has sometimes shown evidence of the presence of a large proportion of alcohol by bursting into a flame upon the application of a match. In a case which came under our observation a few years ago, the hardening of the brain seemed to be the result of accident. The patient was a lad about seventeen years of age. When a small boy, he had received a blow upon the head, in consequence of a fall. Some months afterward, he began to suffer with epileptic fits, which continued till his death. The development of his body seemed to cease at the same time, although the head continued to increase somewhat in size. The patient lived some years, finally dying of consumption in a state of complete helplessness and imbecility. Upon making a post mortem examination of the brain, we found it to be hardened throughout to a very remarkable degree. It was also considerably shrunken, the space around it being filled with serous fluid.

Treatment.—Little or nothing can be done to cure or check the progress of this disease, except when it occurs as the result of syphilis, in which case, thorough treatment for the original disease will, in some cases, effect a cure.

HYPERTROPHY AND ATROPHY OF THE BRAIN.

There is some evidence that the brain occasionally becomes overgrown in consequence of disease. This overgrowth does not consist, however, in an increase of the nerve cells and fibers of the brain, but in excessive development of the connective tissue substance of the organ. This condition is known as hypertrophy. Atrophy is the opposite condition, in which the brain becomes shrunken. The symptoms of both affections are so very obscure that they cannot be distinguished, during life, from other diseases. When atrophy affects but one side of the brain, life may be continued many years, as each half of the brain is complete in itself.

TUMORS OF THE BRAIN.

SYMPTOMS,—Headache, confined to a small space; constant dizziness; momentary loss of consciousness; roaring in the ears; sensation of ants crawling; numbness in different parts of the body; bright spots before the eyes; irritability of mind; delirium; epileptic convulsions; vomiting; paralysis; loss of vision.

Causes.—By far the most common cause of tumors in the brain is

syphilis, although the disease may arise from unknown causes. We met with a case of the latter kind a few years ago in which the patient had for a number of years, at intervals of several weeks or months, suffered repeated attacks of what appeared to be a severe form of neuralgia, accompanied by contraction of the muscles of the neck. The disease gradually increased until finally impairment of vision began, and, after a time, sight was entirely lost. The pain in the head now became at times almost unendurable, and resisted all remedies. We pronounced the case one of tumor of the brain, occurring at the base of the skull, at such a point as to press upon the optic nerve. The patient was a native of Switzerland. He returned to his relatives, who took him to several of the principal hospitals of that country, to consult the eminent physicians in charge. Our diagnosis of the case was confirmed, and the case pronounced a hopeless one. The patient was still living the last we heard of him, several years after he returned to his native country, but was in such a sad condition that he was expected to die at almost any time.

Treatment.—As might be readily supposed, treatment is of little consequence in this affection. The most that can be done is to give attention to the patient's general health, and palliate his symptoms as much as possible.

SPINAL MENINGITIS.

SYMPTOMS:—High fever; wakefulness; burning pain in the spine, extending to the limbs, which increases by pressure; spasm of the muscles of the neck and back; sometimes head drawn back; weakness of the lower limbs or partial paralysis; difficulty in breathing; sense of constriction in the neck, back, and abdomen; retention of urine; priapism; obstinate constipation, followed by diarrhea; great prostration, sometimes delirium and unconsciousness.

This disease is an inflammation of the membranes of the spinal cord. It is a very serious malady, but, fortunately, is not very common. The most frequent causes are injuries to the spine, Pott's disease, rheumatism, and exposure to severe cold and wet. Inflammation of the spine also occurs in *cerebro-spinal meningitis*, a disease which is considered under the head of infectious diseases.

This disease sometimes occurs in a chronic form, which may succeed an acute attack, or be developed gradually. The symptoms are essentially the same as in the acute form of the disease, though less marked.

Treatment.—The patient should be kept very quiet in bed, and should take a simple, unstimulating diet. Fomentations, and alternate hot and cold rubbing of the spine, together with warm applications to the extremities, constitute the best treatment. If the bowels are constipated, they should be relieved by enemas. Care should be taken that the bladder is relieved regularly two or three times a day. In chronic cases, galvanism should be applied to the spine, one pole being placed at either end of the spine, and faradic electricity should be applied to the paralyzed muscles. The two kinds of electricity should be used alternately, each three times a week.

INFLAMMATION OF THE SPINAL CORD—MYELITIS.

SYMPTOMS:—Slight fever; dull, aching pain in the back; gradual loss of motion and sensation in the limbs; loss of control in the bladder and rectum; sensation as of a cord tied around the body; tenderness of the spine; pain induced by applying a hot sponge over the seat of disease; formation of bed-sores; prickling; sensation of cold and heat; numbness; nervous sensations in the limbs.

This affection is an inflammation of the substance of the cord itself. Suppuration, softening, or induration may result. The disease is generally caused by exposure to great heat or cold, or by sexual excesses. The most that can be done is to palliate the patient's sufferings by good nursing, as there is no known remedy by which a cure may be effected.

A form of inflammation of the spine which occurs in small children is a cause of infantile paralysis, under which head it is considered in the section devoted to diseases of children.

PARALYSIS OF THE LOWER LIMBS—PARAPHLEGIA.

SYMPTOMS.—Weakness; numbness; tingling in feet and legs, increasing to complete loss of sensation and motion; paralysis of the bladder and rectum; urine bad smelling from decomposition in the bladder; cramps; twitching of the limbs; great debility.

Causes.—Paralysis of the lower part of the body may result from inflammation of the spinal cord or its membranes, from congestion, or anæmia of the cord, from hemorrhage or apoplexy of the cord, or from an injury.

Treatment.—When due to congestion or inflammation, continuous cold should be applied over the affected part by means of ice compresses or the spinal ice-bag. If the difficulty is due to an opposite condition, fomentations, alternate hot and cold applications, and the appli-

cation of ice three or four times a day, four or five minutes at a time, are among the useful measures. When the disease is chronic, galvanic electricity can be applied to the spine to advantage, and the limbs should be daily exercised by means of thorough friction and massage, and should be treated two or three times a week with faradic electricity. Local applications of faradic electricity to the rectum and over the bladder should be applied as a means of restoring power to those parts when paralyzed. We have sometimes obtained excellent results by this mode of treatment.

SPINAL IRRITATION, OR SPINAL ANÆMIA.

SYMPTOMS.—Tenderness of the spine, at one or more points, which is increased by pressure; pain produced in the spinal cord by percussion and by motion of the spinal column; vertigo; headache; noise in the ears; disturbed sleep; neuralgic pains in the back and chest; neuralgia of the stomach; nausea and vomiting; heart-burn; palpitations; difficulty in breathing; pain beneath the breast; pains in the lower limbs; difficulty in urination; ovarian pain.

This affection is a very common one, especially among women. We do not, however, consider it to be a primary disorder, as we have never yet met with a case of spinal irritation in which there was not some affection of the digestive, generative, or other organs to which it could be fairly attributed. The morbid condition in this affection is supposed to be lack of a proper quantity of blood, and deficiency in the quality of the blood circulated through the spinal cord. The pain is located almost wholly external to the spinal cord. It is, as was just mentioned, symptomatic of other internal affections.

Causes.—Sexual excesses of various kinds, particularly self-abuse, is one of the most common of all the causes of this disease. We have met many cases in which the disease was produced by the last-mentioned cause in both sexes. One of the most marked of these we may be pardoned for describing in some detail.* The patient was a young lady from a western city, whose adopted parents, after consulting many different physicians for a peculiar disease of the breast, placed her under our care. We found her a good-looking young woman about seventeen years of age, rather pale and considerably emaciated, very nervous and hysterical, and suffering with severe pain in the left breast, which was swollen to nearly double the natural size, hot, tense,

* This case we have more fully described in a work entitled, "Plain Facts for Old and Young."

pulsating, and extremely tender to the touch. Occasionally she would experience paroxysms in which she apparently suffered extremely, being sometimes semi-conscious, and scarcely breathing for hours. The spine was also extremely sensitive to the touch. We suspected the cause of these peculiar manifestations at the outset, but every suggestion of the possibility of the suspected cause was met with a stout denial and a very deceptive appearance of innocent ignorance on the subject. All treatment was unavailing to check the disease. Though sometimes the symptoms seemed to be controlled, a speedy relapse occurred, so that no progress toward a cure was made. Finally our conviction that our first impression respecting the case was correct became so strong that we hesitated no longer to treat it accordingly. By most vigilant observation, evidences of the soul-corrupting vice were detected which we considered unmistakable, and then the young woman, who had pretended such profound ignorance of the matter, confessed to an extent of wickedness which was perfectly appalling. Every paroxysm was traced to an unusual excess of sinful indulgence. So hardened was she by her evil practices that she seemed to feel no remorse, and only promised to reform when threatened with exposure to her parents unless she immediately ceased the vile practice. In less than ten days the mysterious symptoms which had puzzled many physicians disappeared altogether. The swollen, tender breast was no larger than the other, and was so entirely restored that she was able to strike it a full blow without pain. Upon examination we found that the spinal tenderness had also disappeared.

This is by no means the only cause of spinal irritation. We have found very many cases in which it was evidently due to disorders of digestion, to diseases of the womb, and to various other diseases.

Treatment.—The proper plan of treatment consists in removing the causes, so far as possible, by the employment of such remedies as will improve the general condition of the patient, and the application to the spine of such remedies as will increase the quantity of blood circulating through it. The best remedies for this purpose are the use of fomentations to the spine, and galvanism. Fomentations should be applied for an hour or two at a time, and should be employed several times a day. The hot-water bag is an excellent means of applying heat. Hot sand-bags, or bags filled with heated corn-meal or salt, are also convenient methods of applying it. Galvanism is, however, by far the best means, when it can be employed. It may be employed in two ways: first,

with the two poles at equal distances above and below the tender portion of the spine ; and, secondly, with the positive pole directly over the seat of pain, and the other at a little distance either above or below. The application should not be continued more than two or three minutes at a time without interruption, and not more than twelve or fifteen minutes altogether. Electricity may be used daily with advantage. In cases in which the patient complains much of a burning sensation in the feet and limbs, this may generally be relieved by the application of the tepid compress over the tender portion of the spine. This may be worn during the intervals between the applications of heat or electricity.

The disease is, in some cases, very obstinate, but may be considered as curable in almost every case, if the treatment is continued a sufficiently long time. Rest in bed, is, in most cases, a very essential measure of treatment. The evils of confinement in bed may be relieved by daily massage, with an inunction two or three times a week, and local applications of electricity to the muscles of the body every other day. The application of sun heat to the spine by means of burning glasses has been lately recommended as an excellent remedy in this affection, but we have not yet had an opportunity of giving it a trial.

The diet of the patient should be very simple and unstimulating. Milk can be used freely, together with fruits and grains. When the patient is quite anæmic, meat may be taken once a day ; but we protest against the excessive use of animal food, which is recommended by some physicians, as serious results may follow from the introduction of an excessive amount of nitrogenous food into the system. We know of one case in which the patient was treated by the plan referred to under the advice of an eminent physician and who was discharged as cured, but died within two weeks of acute Bright's disease of the kidneys, which was undoubtedly produced by the excessive use of meat during her treatment.

In many cases, this disease is very obstinate, apparently resisting the most thorough treatment for months; but, in almost every case, a cure may be effected at last by perseverance in the use of the remedies recommended.

LOCO-MOTOR ATAXIA.

SYMPTOMS.—Begins with dull, heavy pain in the small of the back; pain shooting down the limbs; sensation of a cord tied around the body; or, it may begin with vertigo, epileptic fits, various disturbances of the sight, or contraction of the pupils. When fully developed, disorders of motion; loss of sensibility; toes feel too large for the shoe, or as

if there was something between them or under them; burning pain in the soles of the feet; prickling and numbness in the limbs; pricking of the skin of the limbs not felt as soon as usual; sense of touch diminished; patient feels as though walking on bladders; cannot stand still with eyes shut; difficulty in guiding the feet; in walking, feet placed with flapping motion; cannot walk in the dark or without looking at the feet or ground; diminished sensibility in the fingers; patient cannot button clothes, pick up a pin, or touch the end of the nose readily with eyes shut; in advanced stages, the bladder and rectum become paralyzed.

This disease is a very peculiar affection. It often begins so stealthily that it is frequently quite advanced before its real nature is recognized. Its most characteristic symptom is the manner in which the patient walks, which resembles the gait of a drunken man. The disease is now well understood to be the result of induration of a portion of the spinal cord.

Causes.—Probably the most powerfully acting causes of this disease are sexual excesses and the use of alcoholic liquors. There are also grounds for strong suspicions that it is one of the evil results of the use of tobacco. Syphilis is another cause which is active in quite a proportion of cases. There are other obscure causes.

Treatment.—This disease is a very obstinate malady, often resisting every measure of treatment, although it is very slow in its progress, generally requiring from five to ten years to complete its course, and, in many cases, a much longer time. The best remedies are rest, careful diet, daily employment of galvanism, and hot and cold applications to the spine, hot sponging and the application of faradic electricity to the affected muscles, and massage. By the use of these measures, we have succeeded in greatly relieving cases in which other remedies had been tried in vain. The treatment must be persisted in for a long time, although little or no improvement is seen, in the hope of checking the progress of the disease if nothing more is accomplished.

NEURALGIA.

SYMPTOMS:—Pain either constant or intermittent; may be continuous with frequent exacerbations; when it occurs in paroxysms is described as darting, tearing, or lancinating, and is often very severe; an attack may last a few minutes, or may continue several days; pain usually follows the course of the nerve, along which small, tender points may be felt on pressure with the end of the finger; pain is generally shifting, changing from one nerve to another; it is usually confined to one side; there is, generally, no fever.

Causes.—The principal cause of neuralgia is defective nutrition of the nerves. Romberg has very aptly said that pain is "the prayer of

a nerve for healthy blood." Disorders of digestion are very often accompanied with neuralgia in various parts of the body. The same is true of anæmia, which, in many cases, also depends upon derangement of the digestion. Neuralgia may also be caused by pressure of a tumor upon a nerve trunk, by the contraction of a cicatrix, or scar, in which the end of a nerve trunk is entangled. In malarial diseases it is often due to malarial poisoning. In cases in which it is due to malaria the paroxysms generally occur at regular intervals. Neuralgia is one of the symptoms of lead poisoning. High living, particularly the excessive use of meat, may be fairly set down as one of the causes of this affection. It may also frequently be the result of taking cold, or exposure to cold, of dissipation, loss of sleep, and especially the use of tobacco, alcohol, and of tea and coffee. In many cases it is connected with rheumatism and gout.

Treatment.—Improve the patient's general health by a wholesome, simple, and nutritious diet, and the employment of tonic baths, as a daily sponge bath, and massage in feeble cases. The use of electricity by general faradization two or three times a week, sun baths, exercise in the open air, and all other known means, are a matter of first importance in the treatment of this disease. Ordinary neuralgia may almost always be relieved by either moist or dry heat. In some cases, cold applications give more relief than hot. It is impossible to tell, without trial, whether cold or hot will be most effective. In many cases, it is also necessary to give the patient a warm bath of some kind. The Turkish, Russian, hot-air, electro-vapor, and electro-thermal baths are particularly useful in these cases. A blanket pack is also a very excellent remedy which we have used very many times with success. Probably the best of all known means for relieving neuralgia is the use of electricity. It often succeeds when all other remedies fail. The galvanic current is generally the most effective, though sometimes the faradic current acts the best. The positive pole should be applied over the painful part, and the negative pole near by, or on the nerve center from which the affected nerve originates. Sometimes the pain is temporarily aggravated by electricity, but more often it is relieved during the application. It frequently returns, however, so that repeated applications are necessary. The current should be applied from twenty to thirty minutes daily. We have, in several instances, succeeded in curing obstinate cases of neuralgia by hot and cold applications, when other means have been ineffectual. Quite prompt relief has been obtained by freezing the skin over the af-

fected part. This treatment is administered by making a mixture of equal parts of salt and shaved ice, wrapping quickly in a piece of thin muslin, and applying it over the affected part. From three to five minutes is as long a time as is necessary to produce the desired effect. When the disease is evidently the result of malarial poisoning, which is shown by its regularity, the patient may resort to the use of some of the preparations of Peruvian bark in case relief is not obtained otherwise. Opium should be seldom used in this affection, never when its use can be avoided, since so many cases of confirmed opium-eating have originated in the use of the drug for neuralgia. The remedies which have been recommended for this disease are almost innumerable. But few of them are anything more than palliative, and most are worthless even for giving temporary relief. Other methods of treatment will be mentioned in connection with the description of special forms of neuralgia.

HEMICRANIA—MIGRAINE.

SYMPTOMS.—Attack usually begins in the morning, with heavy, uneasy sensations; slight chilliness; disposition to gape; headache, confined to one side, which rapidly increases, becoming exceedingly severe; eyes sensitive to light; pulse generally slow; at the height of the attack, nausea, retching; billious vomiting.

This is a very common affection. It occurs more often in women than men, very frequently at the menstrual period.

Causes.—Attacks are generally attributed to taking cold, unusual nervous fatigue, or loss of sleep. We are convinced, however, that in many cases, probably the majority, errors in diet are the real cause of the disease. In scores of instances, we have known the affection to disappear entirely upon the discontinuance of the use of tea, coffee, and of the tobacco habit.

Treatment.—For temporary relief, the best measures are fomentations to the affected side of the head, and copious warm drinks until the stomach is relieved. Warm full or sitz baths will often cut short the attack. In case the vomiting is persistent, small sips of hot drink, or of iced water, or small bits of ice, may be taken with benefit. Fomentations over the stomach, or applied to the spine just back of the stomach, are also useful measures. In order to obtain permanent relief, the patient should abandon all known causes of the affection. It is especially important that he should confine himself to a very simple diet. Tea and coffee, alcoholic liquors, condiments of all kinds, much animal food, especially fat meat, animal fats of all kinds, hot bread, pastry, and every-

thing difficult of digestion should be entirely avoided. Exercise in the open air, tonic baths, general applications of electricity, massage in feeble patients, sun baths, and all other remedies which improve the general health should be employed. This disease has been pronounced incurable by some of the most eminent physicians, but we have had the pleasure of relieving, permanently, so many patients who have long suffered with this troublesome complaint, that we feel justified in asserting that it can be cured by the persistent employment of proper remedies.

FACEACHE, OR FACIAL NEURALGIA.

This is one of the most common forms of neuralgia. The pain is usually confined to one side of the face. It may be excited by cold, by decayed teeth, or by causes which are unknown. In some cases the pain is attended by contraction of the muscles of one side of the face, when it is termed tic-douloureux. This form of disease generally occurs in persons considerably advanced in years.

Treatment.—Hot applications to the face, together with hot foot or sitz-baths, and the use of electricity, are the most useful measures. The application of cold to the seat of the pain sometimes gives relief when hot applications are ineffectual. In one case of several years' standing, we succeeded in effecting a cure by the injection of a few drops of chloroform beneath the skin, just in front of the ear; but this measure is rarely necessary if the others mentioned are faithfully tried, together with the use of the necessary means to improve the general health.

LUMBAGO.

SYMPTOMS.—Pain in the back, increased by muscular exercise; patient cannot straighten without great suffering; many tender points found about the seat of pain.

Causes.—The causes of this form of neuralgia are said to be cold, rheumatism, malaria, great exhaustion from overwork. It seems to be, in some cases, the result of severe straining and lifting.

Treatment.—Rest; fomentations, or hot and cold applications to the back, and the employment of hot baths will generally secure quite speedy relief. Some cases are very obstinate, however, and quite exhaust both patient and physician. In a very obstinate case, in which the patient suffered extremely with spasmodic pains and cramps in the back, relief was obtained by continuous stretching of the body, the patient being held by straps passed under the arms, while being stretched by weights attached to the lower extremities. Treat the same as sciatica.

INTERCOSTAL NEURALGIA.

SYMPTOMS.—Pain in the chest, either upon one or both sides; in females most often felt under the breast; pain usually continuous; respiration painful, laughing, coughing, sneezing, exceedingly so.

This disease is often mistaken for pleurisy and other diseases of the lungs. When it affects the left side also, it is often thought to indicate heart disease. Upon careful examination of the patient, however, it will be found that the pain is confined to the spaces between the ribs, and is most severe near the sternum, beneath the axilla, and at the spine. These points are also found to be tender upon pressure, which shows that the disease is confined to the nerve trunk. In many cases of intercostal neuralgia, the pain extends down the inner side of the arm, affecting two fingers upon the inner side of the hand. The pain is sometimes so very severe as to render the patient almost helpless.

Causes.—This form of neuralgia is much the most common in women, in whom it is most generally associated with neurasthenia or nervous debility, dyspepsia, or disease of the reproductive organs. It is often attributed to taking cold.

Treatment.—The affection is best relieved by fomentations or hot and cold applications to the spine, opposite the affected parts. The strong galvanic current, applied to the sensitive nerves, is also of great service. The positive pole should be placed upon the spine, and the negative passed along the course of the affected nerves, or placed successively for a few seconds at each of the sensitive points. Attention must also be given to the improvement of the patient's general health, by proper diet and general tonic measures.

SCIATICA.

SYMPTOMS.—Begins as a dull, heavy ache in the back and upper portion of the thigh; pain gradually becomes more intense, and is increased by motion of the affected limb; sometimes accompanied by cramps in the muscles of the limb.

This is, perhaps, the most common of all forms of neuralgia. A patient who has had one attack is much more liable to subsequent ones. The disease sometimes passes away in a few days, but generally lasts from four to twelve weeks, and may become chronic.

Causes.—The causes of sciatica are essentially the same as those which produce other neuralgias. It is sometimes produced by sitting on a hard chair a long time. Severe exertion with the limbs also some-

times excites an attack. Cases are mentioned in which it has been occasioned by an enlarged prostate gland; a predisposition to the disease is produced by a weak or depressed state of the system.

Treatment.—In addition to hot baths, hot packs, hot fomentations, hot and cold applications, and the use of electricity, all of which remedies have been fully described in the description of treatment for neuralgia, obstinate cases sometimes require still other measures. We have, in some instances, obtained relief by a method of freezing, described on page 1097. In other cases, we have succeeded by the injection of cold water by means of the hypodermic syringe, the injection being made at the seat of pain, as near as possible to the affected nerve. Pricking the nerve with a needle, in some cases gives magical relief. The practice of nerve stretching has lately been recommended for cases which are not otherwise relieved. The operation is a somewhat formidable one, it being necessary to open the tissues down to the nerve trunk, draw out the nerve, and stretch it with considerable force. Good results have been reported in the use of this measure in quite a number of cases; but we have never resorted to it, having found other measures effective in all the cases which we have treated. In a few very obstinate cases we have found it necessary to resort to the injection of a few drops of chloroform by means of the hypodermic syringe, the injection being made into the nerve itself, or as near to it as possible. The method of treatment known as electro-puncturing has also been used by a number of eminent physicians with great success. It consists in applying electricity to the nerve itself by means of a needle passed into it. A very mild current is used.

CRURAL NEURALGIA.

In this affection, the large nerve on the anterior and inner side of the limb is affected. The symptoms of the disease, with the exception of the location of the pain, are the same as those of sciatica. Causes and treatment are also essentially the same.

HEADACHE.

Headache, as a symptom of disease, is present in a great variety of conditions. It is nearly always present in acute fevers. It is also present in most organic diseases of the brain and spine, as well as in many affections of other internal organs, as of the heart, stomach, kidneys, liver, and reproductive organs. When present in connection with

other diseases, it is sometimes the result of disturbance of the circulation incident to those affections, or it may be due to nervous sympathy. The following varieties of headache may be mentioned:—

Congestive Headache.—In this form of headache the head is hot; face flushed; arteries of the neck throbbing; eyes red; and patient complains of a bursting feeling, as though the brain were too large for the skull; the hands and feet are generally cold.

Treatment.—This headache is best relieved by derivative measures applied to the extremities and the application of cold to the head and neck. When it is persistent, it may be necessary for the patient to wear the wet head cap for several days. If complicated with neuralgia, fomentations should be applied for fifteen to twenty minutes at a time, three or four times a day, the head being kept cool by cold compresses during the intervals. Among the most frequent causes of congestive headache are errors in diet, tight lacing, defective clothing of the feet and the limbs, taking cold, and especially the use of tea, coffee, and alcoholic liquors. All these causes must be scrupulously avoided. The patient should restrict himself to a careful diet, using very little flesh-meat, and avoiding condiments altogether. But few kinds should be taken at a meal, and the patient should eat sparingly. A short course of eliminative treatment, consisting of packs and warm baths should be resorted to when the patient is quite fleshy and plethoric. When there is great coldness of the lower extremities, the hot foot bath, alternate hot and cold rubbing, and the leg pack, are excellent measures for restoring the balance of the circulation. Persons who are subject to congestive headaches should sleep with the head elevated, so as to check, in some degree, the tendency of blood to the head.

Anæmic Headache.—In this kind of headache, the condition of the brain is just the opposite of that in the variety just described. The organ contains too little blood instead of too much. It occurs most often in aged or feeble persons, and persons suffering with nervous debility, anæmia, and other diseases characterized by poverty of the blood. This form of headache may be recognized by the fact that the patient often feels dizzy when sitting up or standing, and is relieved by lying down. It generally affects the top of the head, may also be located at the back part or in the forehead. It is not of a throbbing character. May often be described by the patient as a gnawing pain. The pupils are usually dilated, and the tendency to faintness upon assuming an upright position is marked.

Treatment.—The patient should lie quietly in bed, with the head depressed a little below the level of the feet, at least not bolstered up by pillows. Cold should be applied to the back of the neck, or between the shoulders, and continuous warmth to the top and front part of the head, by means of fomentations, or the hot water bag. Electricity is a very useful measure in this form of headache. The galvanic current may be employed, placing the positive pole upon the forehead and the negative at the back part of the head; or the faradic current may be used, the negative pole being placed at the lower part of the spine, and the positive at the top of the head.

Sympathetic Headache.—This form of headache may arise from disturbance of the stomach, liver, or from irritation of the uterus or ovaries. Headache arising from disturbance of the stomach or liver is generally felt in the front part of the head just above the eyes. The temples are also sometimes affected. Headache from uterine or ovarian irritation is chiefly felt at the top of the head.

Treatment.—This form of headache can be permanently relieved only by the cure of the disorders upon which it depends. Temporary relief will generally be obtained by the application of a fomentation over the part with which the headache is sympathetic, as over the region of the stomach, in stomach headache, and over the lower part of the bowels in uterine and ovarian headache. In some of the latter cases, a hot fomentation over the spine, followed by a rubbing with the hand, dipped in cold water is an excellent means of affording relief. Wearing the wet abdominal bandage at night, and, in severe cases, both night and day, for a time, will often relieve a persistent headache due to derangements of the stomach and bowels The wet compress, worn over the lower part of the spine, is very frequently effective for the relief of headaches which depend upon irritation of the uterus or ovaries. A hot vaginal douche, used daily, and frequent sitz baths, are also excellent measures in the latter cases.

Sick, or Bilious Headache.—This form is characterized by a throbbing, splitting pain in the temples. The patient also feels sickness at the stomach, and generally vomits a large quantity of undigested food followed by bile, before relief is obtained. It is caused by errors in diet. Persons who suffer from this form of headache, habitually, are subject to bilious dyspepsia, and should follow the directions for treatment prescribed for that disease. Generally relief may be obtained by hot fomentations to the head, followed by tepid compresses, hot fomentations

over the stomach and bowels, and hot drinks. When the bowels are constipated, as they generally are, the patient should take a large warm water enema. When possible to do so, warm sitz and full baths should be taken, as great relief is generally afforded by these means. Patients subject to bilious headache should avoid the use of tea, coffee, fats of all kinds, tobacco and spirituous liquors, which are among the most positive causes of the disease.

Nervous Headache.—This form of headache closely resembles the preceding in its symptoms, but is generally confined to one side of the head. It is elsewhere described under the head of hemicrania, or migraine, which see for treatment, etc.

Headache from Other Diseases.—The headaches of fever, and the headaches which are present in connection with various other diseases, as gout, neuralgia, rheumatism, diseases of the heart, kidneys, and organic affections of the brain and spinal cord, are cured only by the relief of the primary diseases of which the headache is symptomatic. When these are curable, the headache will disappear as improvement in the disease takes place. When incurable, as in organic disease, the pain in the head will, of course, be obstinately persistent.

CHOREA—ST. VITUS' DANCE.

SYMPTOMS.—At first, slight twitching of the muscles of the face and limbs on one side; after a time, nearly all the muscles of the body become affected; constant restlessness; articulation indistinct; twitching of the muscles increased by slight movement; sometimes contractions so strong as to throw the patient upon the floor; digestion impaired, bowels constipated.

Causes.—The causes of this disease are not well understood, neither is it known what part of the nervous system is affected in this disease. It is probable, however, that it is chiefly due to defective nutrition of the brain and spinal cord. We have always found the disease associated with impaired digestion and an inactive state of the bowels. We have also observed that the disease is likely to occur in the children of parents who are addicted to the use of tobacco and alcoholic liquors. It more often affects girls than boys, and is most common between the ages of six and fifteen years. Chorea has frequently prevailed in epidemics, especially among factory employees.

Treatment.—The disease is rarely, if ever, fatal, though it may continue a long time if proper treatment is not administered. The most important of all are such hygienic measures as will improve the patient's

general health. The food should be of the most nutritious character. The patient should take little or no meat, but abundance of oatmeal, cracked wheat, graham bread, and other whole-grain preparations. Exercise in the open air should be taken daily. The bowels should be moved daily by enemas, if they do not move spontaneously; but the application of measures recommended for constipation will generally relieve this difficulty without the constant use of enemas, which is to be avoided when possible. Daily massage and sponging of the whole body in tepid water is also important as a measure of treatment. In addition, we usually employ the ice pack, or hot and cold applications to the spine. These applications should be made daily, from ten to twenty minutes at a time. They are frequently followed by almost immediate relief, which is at first temporary, gradually becoming more permanent. Galvanism of the spine, and central galvanization are means which should be employed in obstinate cases. We have often used them with excellent effect. Daily gymnastic exercises are very useful. This plan is used in the hospital for children at Paris. Drs. Gray and Tuckwell report in the *London Lancet* the successful treatment of a large number of cases, and assert that "the hygienic plan is alone sufficient to cure chorea and quite as promptly as any drug."

EPILEPSY, OR FALLING SICKNESS.

SYMPTOMS.—Convulsions, or fits, in which the patient falls; violent jerking of the muscles; frothing at the mouth; biting of the tongue; face at first livid, afterward red and swollen; attack generally followed by disposition to sleep for one or two hours.

This disease is so common that it needs but a very brief description. The symptoms described above are those which occur in a severe case. In milder cases, there may be simply a slight loss of consciousness for a few seconds, after which the patient resumes whatever occupation he may have been engaged in at the time of the attack. If walking across the room, he stops suddenly with a startled aspect, or with the eyes rolled upward. If eating at the table the attack may be signalized by dropping the knife or fork. This form of the disease is known as *Pettitmal.* The severe form of the disease is just preceded by peculiar sensations which the patient recognizes as premonitory of the attack which is termed the aura. In some cases the patient utters a peculiar cry at the beginning of the attack, which may consist of a slight jerking of the toe or finger, or in a peculiar sensation at the pit of the stomach. The epilepsy is a very chronic

disease. In many cases, it is well established before its real nature is recognized, the attacks at first being so slight as to pass unobserved. In many cases, especially in children, they occur in the night, so that neither the patient nor his friends, for a long time, are aware of the existence of the disease.

Causes.—This affection originates from quite a variety of causes, among the chief of which are hereditary influences, sexual excesses, the use of alcoholic liquors and tobacco, syphilis, excessive mental labor, and errors in diet. We have met a number of cases in young men in which the disease was clearly traceable to self-abuse. In several cases of adults which we have treated, other sexual excesses have been practiced, of which the disease was clearly the result. In our opinion, errors of diet have much more to do with producing this disease than is generally supposed. We have rarely met with a case in which there was not marked disturbance of the digestion, and have noticed particularly that the worst attacks, in patients suffering with the disease, almost always follow some excess in eating or other dietetic transgression. Excess in the use of animal food may also be charged with producing a strong tendency to this disease, if it is not a directly exciting cause.

Treatment.—This is an exceedingly obstinate disease, and has long been looked upon as almost incurable. Undoubtedly there are many cases in which the disease is incurable in character on account of the incurable nature of the conditions by which it is produced. When a marked tendency to the disease is inherited, and when it arises from the formation of tumors in the brain, or of other organic changes in the nerve centers, no remedies which can be employed will be found of any special utility. Our experience in the treatment of this affection convinces us, however, that in a large proportion of cases a cure can be effected. In order to accomplish this, the patient must comply rigidly with every needful requirement. The diet must be plain and simple, consisting almost wholly of fruits, grains, and vegetables. Milk and eggs can be used in moderation, but the less meat the patient takes, the better. Those who have had the most experience in the treatment of epilepsy, insist that a vegetable diet is one of the essential features of successful treatment. Bad habits of every sort, and the use of tobacco, alcoholic liquors, and of tea and coffee, must be wholly abandoned. The patient must practice rigid continence. Every possible attention should be given to building up the general health by exercise in

the open air, and regular and adequate sleep, and attention to all the laws of hygiene. It is not only necessary that the patient should eat the right kind of food, but he should be particularly careful to avoid excess in eating. One of the peculiar features of this disease is a voracious appetite with a tendency to eat very rapidly. If the appetite cannot be controlled in any other way, the patient should be placed on an allowance. We have in some instances found the difficulty in controlling the patient's appetite one of the greatest obstacles to recovery. The most effectual remedial measures are general baths, taken with sufficient frequency to secure thorough cleanliness and activity of the skin. In addition, fomentations over the stomach and liver may be taken daily in connection with the warm leg bath, alternate hot and cold applications to the spine, particularly the upper part, and the application of galvanism in the form known as central galvanization, together with galvanization of the spine. In some cases of very inveterate character, we have found it advantageous to employ bromide of potassium for a time, in order to destroy the periodicity of the paroxysms, when they occurred with great frequency. In some cases, in which the bromide of potash has been wholly ineffectual in checking or keeping off the paroxysms, we have been able to accomplish the desired result by means of the other measures described.

During the attack, care should be taken to prevent the patient doing himself injury, as by falling upon some sharp object or upon a hot stove. We had, sometime since, a patient who had broken both ankles, and otherwise injured himself, by falling from the balcony of a hotel during an epileptic fit. Many patients carry with them a wedge of wood, to be placed between the teeth when the symptoms of an attack make their appearance, thus preventing biting the tongue, which is sometimes a very unpleasant feature of the disease. In patients in whom the attack is preceded by an aura, the fit may sometimes be kept off by the prompt application of proper treatment. When the aura is felt in the limb, as is very often the case, simple pressure of the limb against some hard substance, or placing the hand in cold water will in many cases prove effectual. In a case now under our care, the patient is generally able to resist the attack by grasping with firmness the handle of a cane which he always carries with him for the purpose. The paroxysm itself is seldom attended with immediate danger, although the contortions are sometimes so frightful as to excite great alarm.

HYSTERIA.

SYMPTOMS.—Patient laughs or cries immoderately without cause; has hallucinations; all the senses perverted; morbidly sensitive to light and sound; breast sensitive; pain in ovary; headache; wandering pains in the chest, abdomen, joints and spine, especially between the shoulders; loss of sensation in the skin; paralysis of certain muscles; sometimes loss of voice; sensation as of a ball rising in the throat; contraction of the muscles; violent spasms; disorder of digestion with symptoms of nervous dyspepsia; changeable temper; sometimes large quantity of pale urine; in some cases delirium or stupor.

The above is a very inadequate description of this peculiar disease; in fact, a complete description would include a list of the symptoms of all known diseases, since there is no known malady which may not be imitated by hysteria. The affection is not, as many people suppose, wholly an imaginary disease, but is really a malady of considerable gravity. A healthy person never suffers with hysteria. There is always some disease of the nerve centers, although it is not possible to say exactly what is the real nature of the disease. Many authors think that when it occurs in females, as it almost always does, the affection has a close relation with the ovaries. The peculiar phenomena exhibited by the "Jumpers" or "Jumping Frenchmen" of the lumbering regions of Maine, is probably due to a species of hysteria.

Causes.—Hysteria almost always occurs in females, and most frequently between the ages of fifteen and twenty-five. In rare instances it affects men as well as women. We have met a few cases of this kind. The most common causes are sexual excesses, novel-reading, perverted habits of thought, and idleness. It occurs most frequently among young ladies who have been reared in luxury and who have never learned self-control, but who have had every whim and fancy gratified until self-gratification has come to be their greatest aim in life. It is a notable fact that hysteria rarely or never occurs among the women of uncivilized nations. It is stated that before the war, the disease was unknown among the negro women of the South, though it has occasionally been met with since the emancipation.

Treatment.—This disease may be considered as curable in nearly all cases. Indeed it is not, of itself, a fatal malady; but mental and moral, as well as medical, treatment are essential. The patient must be taught self-control; the mind must be, by some means, drawn away from herself. The most effective means of interrupting the paroxysm

is the application of cold in some form to the head and spine. Either the cold pour, or the ice pack may be employed with almost certain success. To prevent the recurrence of the paroxysms, the patient's health should be improved as much as possible by abundant exercise in the open air, wholesome diet, plentiful sleep, and general tonic treatment. Sitz baths may be used, in most cases, to advantage, one or two a week, the temperature ranging from 92° to 93° at the beginning of the bath to 88° or 85° at the conclusion. The bath may last fifteen or twenty minutes with advantage. With patients whose blood is poor, massage and inunction two or three times a week should be employed. A daily spinal ice pack, continued from ten to twenty minutes, may be used with advantage. Galvanism to the spine is another useful measure. When there is paralysis of sensation and motion, faradic electricity should be applied to the paralyzed parts.

CATALEPSY.

SYMPTOMS.—Sudden loss of consciousness; patient remains motionless in the same position as when attacked; slight rigidity of the muscles.

This affection is similar to trance. It occurs most often in hysterical women, sometimes in men. The length of the attack may vary from a few minutes to several hours, or even days. Ecstasy is a peculiar form of this affection in which the patient does not lose consciousness but experiences a great exaltation of feeling, and is subject to various illusions and hallucinations. History gives us numerous and very interesting examples of this disease, many of which have been made the means of very extensive religious deception.

TETANUS—LOCKJAW.

SYMPTOMS.—Begin suddenly; muscles of the throat and jaw usually affected first; sensation of stiffness and difficulty in swallowing; jaw becomes set, mouth closed, teeth clenched; mouth drawn to one side, in children, mouth partly open and lips puckered; muscles of the back, neck, and abdomen hard and tense; violent spasms every few minutes; sometimes body bent back in the form of an arch, patient resting on head and heels; pulse frequent and feeble; great thirst, but difficulty and great increase of pain on attempting to swallow; frightful suffering.

This disease most frequently occurs in adults, though it is not unknown in children, in whom it generally occurs soon after birth It is very fatal disease, death generally occurring within three to fourteen When life is prolonged more than two weeks the prospect of re- s greatly increased.

Causes.—The most common cause is lacerated or contused wounds, especially wounds in which foreign bodies are left in the tissues, as from splinters, rusty nails, glass, bullets, etc. Wounds of the extremities are much more likely to give rise to tetanus than those of any other part of the body. It is generally believed by physicians that the affection is most often caused by taking cold in a wound, and not by the wound alone. In infants, it always occurs within one to five hours after the fall of the navel string, and probably arises in the same way as from wounds. The disease generally makes its appearance within nine days after the occurrence of the wound; when the interval is longer than this, it is said to be chronic. The disease is most common in tropical countries, and affects negroes more than people of other nationalities.

Treatment.—Nearly all known remedies which affect the nervous system have been tried; the majority, however, without any effect, as the disease still continues to be one of the most fatal maladies which the physician has to encounter. The most effective remedy is the continuous application of the ice pack to the spine. Ice bags or rubber bags filled with ice-cold water, frequently changed, should be employed if possible; care should be taken to keep other portions of the body dry. Prof. Niemeyer recommends the use of warm baths. Either the full bath or the hot-air bath may be employed. Probably the most effective is the Russian bath, in which the patient can lie full length while the bath is being administered. Care should be taken to give the patient an ample supply of fresh air at all times. This is especially necessary on account of diminished ability of respiration. When the patient is not able to swallow without great suffering, as is generally the case, nutritive injections should be employed. See page 738.

PARALYSIS AGITANS—SHAKING PALSY.

SYMPTOMS.—Trembling in some portions of the body, usually the arm or leg; trembling ceases when asleep; diminished muscular power.

There are two forms of this affection. The symptoms given above describe the simple form of the malady, which seems to have no fatal tendency, and, in most cases, is curable by the use of proper remedies. In this form of the disease, the trembling does not generally extend very far beyond the part first attacked. In the more serious form of the affection, the trembling gradually extends from the part attacked until the whole body becomes affected; the patient assumes a stooping posture; general paralysis of the whole body supervenes, which finally leads to a fatal termination.

Treatment.—The most effective measures of treatment are hot and cold applications to the spine, galvanization of the spine and muscles, together with the daily use of hot sponging the affected muscles. The general health should be improved by the use of tonic measures and a nutritious diet. These measures are generally effective, if perseveringly used, in the mild form of the affection, but accomplish nothing more than to retard the progress of the severer form, which is always fatal.

MUSCULAR ATROPHY—WASTING PALSY.

SYMPTOMS.—Begins with loss of strength in arms and legs; pain in the affected muscles; slight quivering of the muscles; most often commences in the upper extremities; generally begins with wasting of the muscles of the hand, the wasting extending to the arm and shoulder, and then to the whole body.

As pain is one of the first symptoms felt, the disease is often taken for rheumatism or neuralgia, its real character not being discovered till marked wasting has occurred.

Cause.—Overuse of the muscles is probably the principal cause of this affection. It occurs most frequently in professional dancers, blacksmiths, athletes, and others who habitually practice great exercise of certain muscles.

Treatment.—Galvanization and faradization of the affected muscles, hot and cold rubbing, hot sponging and massage applied to the affected parts. Galvanism and hot and cold applications to the spine are serviceable in some cases. Drugs are of no value.

NEURITIS—INFLAMMATION OF A NERVE.

SYMPTOMS.—Neuralgic pain in the affected nerve, with loss of sensation in the parts to which it is distributed; pain continuous; nerve tender; pressure upon nerve causes pain in the parts in which the nerve ends; twitching of the muscles in the affected part; generally no fever.

It is sometimes difficult to distinguish neuritis from neuralgia, since the pain of neuralgia is not infrequently caused by inflammation of the affected nerve. Recovery from neuritis is very often incomplete, the patient continuing to suffer pain in the nerve, and numbness in the parts supplied by it. Inflammation of the sciatic nerve is a common cause of obstinate sciatica, in consequence of the sheath of the nerve becoming thickened.

Cause.—The most common cause of neuritis is injury of the nerve,

or an inflammation of the adjacent parts. The inflammation is sometimes rheumatic in character.

Treatment.—Rest; ice along the course of the nerve; in case the ulnar nerve of the arm is affected, the whole arm may be enveloped in ice-cold compresses. It is also well to keep it elevated, so as to induce contraction of the blood-vessels. Hypodermic injections of ice-cold water into, or near, the nerve, and the use of a strong galvanic current, applied for half an hour once a day is effective in severe cases. Galvanism, faradization, hot sponging, fomentations, and alternate hot and cold applications, are the best remedies for the effects which may remain after the subsidence of acute inflammation.

FACIAL PARALYSIS.

SYMPTOMS.—Patient cannot close the eye on the paralyzed side; cannot wink; tears run over the lower lid upon the cheek; face drawn to one side, most evident when patient smiles.

This affection involves paralysis of the seventh cranial nerve, which is the nerve of motion of nearly all the muscles of the face. It produces a very unpleasant deformity. The side of the face affected is without expression, remaining motionless when the patient laughs or smiles. If he attempts to whistle, the mouth is puckered to one side. In eating, the food accumulates between the teeth and the cheek on the affected side, making it necessary for the patient to use his finger to dislodge it.

Causes.—Cold; inflammation of the facial nerve; disease of the heart; injury to the temporal portion of the skull.

Treatment.—Galvanic electricity applied to the affected parts daily or every other day. Faradic electricity is sufficient in mild cases; electricity in some form is essential. Care should be used not to employ too strong a current when using galvanism about the eye. Pinching and manipulation of the affected muscles is an excellent means of restoring their function. On account of the eye remaining open, it is subject to many sources of irritation, as dust, cold winds, etc. The patient may remedy this difficulty to a considerable extent by closing the eye with the finger, or holding the lids together by means of a strip of adhesive plaster. An eminent New York surgeon, Dr. Detmold, has invented an ingenious means of relieving the deformity to a considerable degree. It consists of a smooth hook, made of gutta-percha or silver wire, which is hooked into the corner of the mouth on

the affected side and connected by an elastic band to the ear. This simple instrument draws the muscles of the mouth into proper shape, and not only relieves the deformity, but when used continuously for a long time, does much toward effecting a cure. An ingenious surgeon has suggested the use of a double hook, made of zinc and copper wire bound together by copper wire, one end being attached to the ear and the other to the corner of the mouth. The electric current generated helps the cure.

TEMPORARY PARALYSIS.

A slight temporary paralysis is sometimes produced by pressure upon a nerve trunk. Temporary paralysis of the arm is often produced by lying upon it during sleep, or falling asleep with it hanging over the back of a chair in such a way as to allow it to press upon the nerve. When the paralysis is slight, the arm is said to be "asleep." It may also be produced by a blow upon an exposed nerve, as by a sudden blow upon the elbow at the point popularly termed the "crazy bone," or "funny bone." "Crutch paralysis" results from the pressure of a crutch in its use in walking.

Treatment.—Rest, rubbing, hot and cold applications, and the use of electricity, are all the measures usually required to effect a speedy cure.

MIMETIC SPASM OF THE FACE.

SYMPTOMS.—Grimaces, usually of one side of the face only, such as wrinkling the forehead, blinking the eyes, twitching of the nostrils, drawing down the corners of the mouth; spasm is excited by motions of the body, even by walking; contractions; sighing during sleep.

This is a very curious disease, giving to the patient, in many instances, a very comical appearance. In some cases it attacks the little muscles of the external ear, which are not ordinarily under the control of the will, sometimes keeping the ear in constant motion for hours at a time. Contractions are not usually accompanied by pain. The spasm is, in some cases, continuous, the features of one side of the face remaining drawn for a long time; in others, a quick jerking movement occurs at short intervals. When continuous, the spasm of the muscles is termed "tonic;" the interrupted spasms are termed "chlonic."

Causes.—The most common are cold, injuries to the face, decayed teeth, and abnormal mental emotions.

Treatment.—Warm baths, galvanism to the affected part, and attention to the patient's general health, are the most effective measures. The disease is obstinate, and frequently does not yield readily to treatment. In severe cases, pressure over the principal branches of the facial nerve should be applied. The pressure is most effective just in front of the lower portion of the ear. It may be made continuous by means of a spring attached to a hard pad. Division of the affected muscles has been tried in some cases.

TORTICOLLIS—WRY NECK.

SYMPTOMS.—Ear of one side drawn toward collar-bone, twisting the head; spasm interrupted or continuous; when both sides are affected, spasmodic nodding, or head bent forward.

This peculiar affection is very often combined with spasm of the face. Its causes are quite obscure, though in many cases the disease is traced to exposure to cold. It may arise from disease of the vertebræ.

Treatment.—Wry neck sometimes resists the most energetic treatment. The majority of cases, however, can be relieved, and in time, cured. Experience shows the best remedies to be the application of electricity to the muscles of the sound side, division of the affected muscle, and the wearing of such an apparatus as is shown in Fig. 321.

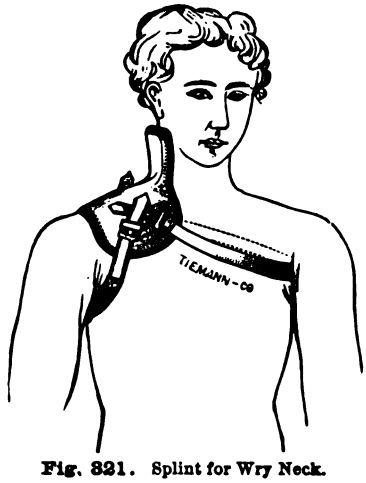


Fig. 321. Splint for Wry Neck.

WRITER'S CRAMP.

SYMPTOMS.—At first, fatigue and sense of insecurity in arm and hand; patient grasps his pen too firmly; fingers seem clumsy; pen jerked up and down by twitching of the muscles of the hand and arm.

Under the head of writer's cramp may be included a number of allied diseases affecting other muscles than those of the hand; thus we have cobbler's cramp, milker's cramp, and blacksmith's cramp, as well as writer's cramp.

Cause.—The principal cause which has been assigned to this affec-

tion, is the long-continued use of a single set of muscles in a particular way, as in writing, milking, and other occupations. The most recent explanation of the nature of the disease is, that it is chiefly due to an increase of the power of automatic movement in the affected parts. It is well known that when certain movements are many times repeated, they may after a time, become automatic, that is, are performed without the direct action of the will. It has been suggested that writer's cramp is an exhibition of this faculty in an exaggerated degree, due to a long continued use of one set of muscles in the same way. It is said that copyists are much more likely to be affected with the disease than editors, authors, and others who compose as they write. This explanation does not seem to us very satisfactory, however, since walking, an act which becomes almost completely automatic, is not affected by any disturbance of this sort. The observation mentioned with reference to the class of persons affected, may be readily explained by the fact that with the copyist the motions of the hand are more uniform and continuous. Authors write as they think, sometimes fast, sometimes slowly, and often with frequent pauses, which affords opportunity for the muscles to rest. It has been noticed that this affection has arisen since the introduction of steel pens, and hence it is attributed in some degree to their use. It is also thought that the disease is encouraged by anything which restricts the motions of the muscles of the arm, as a tight coat-sleeve, an elastic, or any other means of constriction.

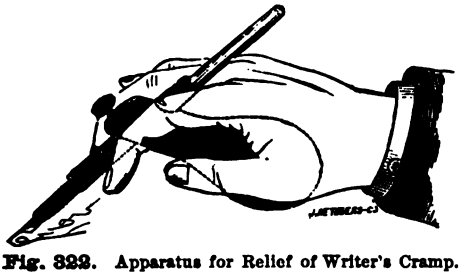


Fig. 322. Apparatus for Relief of Writer's Cramp.

Treatment.—In many cases, absolute rest of the affected muscles is necessary. This frequently necessitates a change of occupation. Every possible attention should be given to improvement of the general health. The application of galvanism to the affected muscles is an effective remedy in many cases. Hot sponging, alternate hot and cold applications, and massage, are also of use. Some patients obtain the needed relief of the affected part by learning to write with the other hand; but, unfortunately, in many cases, this also becomes affected. Some relief from the disagreeable jerking may be obtained by the use of quill or stub pens.

Still more benefit may be derived by the use of a simple apparatus shown in Fig. 322, which consists in a rounded part, to be held in the hand, to which is attached an adjustable pen-holder and pen. By means of a screw, the pen-holder may be placed at any angle necessary. The fore and middle fingers are supported by rests at the sides of the instrument, while the thumb lightly grasps the rounded portion in the palm. This enables a person to write without putting the hand in the usual position, in which the pen is grasped by the thumb and forefinger. Fastening a sponge to the pen-holder at the point at which it is held, sometimes answers the same purpose. Some persons find relief to a considerable degree by grasping the pen between the first and second fingers, instead of between the thumb and forefinger.

CRAMP.

This term is applied to a sudden spasmodic contraction of a single muscle or set of muscles. It most frequently occurs in the calf of the leg. It sometimes extends to the whole body. It is often very painful. In many cases the spasm is preceded by a crawling or tingling sensation, or stiffening of the parts affected.

Treatment.—When the cramp is confined to a single muscle, as in cramp of the leg, it may be relieved by simply grasping the muscle and pressing it with considerable force.

A gentleman who was much troubled with this peculiar affection, and to whom we recommended compression as a remedy, had made for the purpose, two straps, furnished with a buckle at each end, which he always carried with him. Whenever he felt the first symptoms of attack, he would apply the straps to the calves of the legs, where the cramp always began, buckling them as tightly as possible. The application of heat and cold to the spine, with fomentations to the affected part, are useful measures. When the cramps extend to various parts of the body, a general warm bath will usually afford relief. Some cases are best relieved by applications of ice to the spine. Ice may be applied by the ice pack, or by rubbing a piece of ice, inclosed in a piece of muslin, up and down the spine. The patient should be kept as quiet as possible, as the least motion will often induce a return of the spasms after they have ceased. Gentle manipulation of the affected muscles, if very cautiously performed, will sometimes relieve the tendency to spasm.

SLEEPLESSNESS, OR INSOMNIA.

This is a serious symptom of disease of the nervous system which should not be neglected. When an individual cannot sleep, his nervous system will rapidly get out of repair, and serious disorders will make their appearance in consequence of nervous debility induced by want of rest. Sleeplessness is often a precursor of insanity, of which it is not infrequently an important symptom. In many cases, the mental disease is due loss of sleep for a protracted period. When an individual discovers that he is becoming habitually sleepless, perhaps lying awake several hours every night, not obtaining more than one-half the proper amount of sleep, he should at once give serious attention to the matter, for the purpose of remedying the cause.

Causes.—The patient may be deprived of sleep in consequence of pain in some part of the body, as from neuralgia, from severe headache, or from other painful affections, or he may toss about, anxiously longing for sleep, but kept awake by mere nervousness. In other cases the immediate cause of inability to sleep is activity of the intellect, the mind continuing so active that sleep is impossible.

The principal causes of sleeplessness are eating before retiring, excessive brain work, too little physical exercise, indigestion, the use of tea and coffee, tobacco-using, the use of alcoholic liquors, and high living, especially the excessive use of meat and stimulating condiments. Constipation, biliousness, heart disease, asthma, and other affections which produce congestion of the brain and an irritable condition of the nervous system, are frequent causes of deficient sleep.

Treatment.—A person who suffers from sleeplessness should avoid the use of tea and coffee, tobacco, alcoholic liquors, and all other stimulants and narcotics, but should especially avoid eating late at night. Eating just before retiring has been recommended for sleeplessness, and, in some cases, a palliative effect is certainly produced, but the ultimate result is an aggravation of the difficulty instead of relief. If a person suffers "faintness" or "all gone feelings" at night, so that he cannot go to sleep, he should take a few sips of cold water or a glass of lemonade. As complete relief will generally be obtained as from eating, and the stomach will be saved the unpleasant task of attempting to digest a meal when it should be resting with the remainder of the body. A warm bath just before retiring, a wet-hand rub, a cool sponge bath, gentle rubbing of the whole surface of the body with the

dry hand, massage, galvanism applied to the head and spine, hot and cold applications to the spine, and the application of a fomentation over the stomach, are all useful measures for the relief of sleeplessness. When the feet are cold, they should be thoroughly warmed by a hot foot or leg bath, and thorough rubbing. In many cases, the alternate hot and cold foot bath or the shallow cold foot bath are more effective than the hot foot bath. When the head is congested, these measures should be supplemented by the application of cold to the head, as the cold compress, the ice-cap, or a cold pour. In some cases a tight bandage about the head and a cold compress laid over the eyes, after the patient goes to bed, is effective. Persons suffering with hyperæmia or congestion of the brain, should raise the head of the bed a few inches, so as to diminish the tendency of the blood to the brain.

Persons who suffer for want of sleep from sedentary habits are benefited by a walk in the evening, just before retiring, or gentle calisthenics. In most cases it is important that the patient should retire early. This is especially the case with persons whose sleeplessness is connected with neurasthenia or nervous debility. Unfortunately, in many of these cases, the patient feels better in the evening than in any other part of the day, and consequently is very reluctant to go to bed, especially when he has the unpleasant prospect before him of tossing uneasily about till day-break. The disposition to put off retiring until a late hour should not be yielded to, as the unusual exhilaration felt in the evening is an unnatural condition, which, if encouraged, will aggravate the difficulty. All exciting influences should be avoided in the evening The patient should keep himself as quiet as possible. In man cases it is necessary to forbid conversation or reading, or even amusement of any sort which will excite the nerves or mental faculties. Hot-water bags, hot jugs, and bed-warmers of all descriptions, are of use for individuals whose circulation is unusually defective, though, in some cases, these means of relief may become a source of damage when depended upon too largely and for a great length of time. Attention should be given to the bed and the sleeping apartment. Feathers should be discarded. The bed should be neither too soft nor too hard, and should be thoroughly aired daily. An abundant supply of fresh air should be introduced into the bedroom in such a way as to secure its admission without drafts. As a general rule, a fire in a sleeping room, at the time of retiring, is disadvantageous. Care should be taken that the bed be thoroughly

warmed and the apartment dried during the day, but the room should be at least ten degrees cooler at night than is required for comfort during the day.

Various devices have been proposed for the benefit of persons who lie awake at night for hours, unable to get to sleep on account of excessive mental activity, such as counting, repeating over some simple formula of words, etc. The best means of this kind we have ever become acquainted with, is the practice of prolonged deep inspirations. The lungs should be slowly filled to their utmost capacity, and then emptied with equal slowness, repeating the respiration about ten times per minute, instead of eighteen or twenty times, the natural rate. In the majority of cases in which sleeplessness is not due to any special exciting cause, this plan is quite effective. We have often recommended it with entire success. Simply stroking the head will often soothe the nerves of a patient till he readily falls asleep. This is not due, however, to any mesmeric or magnetic influence on the part of the rubber.

When a person falls asleep upon first going to bed, and after sleeping two or three hours, awakes, and is unable to get to sleep again, relief will in many cases be obtained by getting out of bed, and rubbing the whole surface of the body with the dry hand. Simply walking about the room for a few minutes, exposing the skin to the air, will have a quieting effect upon the nerves, so that when the person returns to bed he will quickly fall asleep. It is especially important with most persons who do not sleep well, that rest should be undisturbed after the patient falls asleep at night. Great care should be taken to avoid waking such a person, as if not roused he may sleep quietly until morning, when, if wakened, he will lose the whole night's rest.

The use of drugs for the purpose of inducing sleep should be avoided as much as possible. Opium is especially harmful, and its use should not be resorted to when it can be, by any possible means, dispensed with. Sleep obtained by the use of opiates, is by no means a substitute for natural sleep. The condition is one of insensibility, but not of natural refreshing recuperation. Three or four hours of natural sleep will be more than equivalent to double that amount of sleep obtained by the use of narcotics. When a person once becomes dependent upon drugs of any kind for producing sleep, it is almost impossible for him to dispense with them. It is often dangerous to resort to

their temporary use, on account of the great tendency to the formation of the habit of continuous use. The use of opiates for securing sleep is one of the most prolific means by which the great army of opium-eaters is annually recruited. Chloral, bromide of potash, whisky, and other drugs, are to be condemned almost as strongly as opium. If any sleep-producing agent besides the simple remedies mentioned must be employed, *lupulin, gelsemium, belladonna,* and *Indian hemp,* are to be recommended rather than opium; but these should not be used except under the directions of a physician. A hop pillow is a popular remedy of some reputation for producing sleep. We have no doubt that it is beneficial in many cases.

SOMNAMBULISM.

Sleep-walking must be regarded as a nervous disorder, or at least symptomatic of a disordered condition of the nervous system. It most often occurs in persons of a hysterical temperament, being very common in persons suffering from hysteria. In this class of persons it may be induced by anything which occasions disordered sleep. It always occurs in connection with dreams, which are sometimes of such a vivid character as to occasion violent exertion on the part of the patient. For further explanation of sleep-walking, see page 146.

Treatment.—When the person is found to be addicted to sleep-walking, careful inquiry should be made respecting the condition of his health, particularly that of the nervous system, and treatment should be applied accordingly. All causes likely to excite the nervous system should be removed. In order to prevent the patient from doing himself harm, he should be carefully watched during the night. When this is impossible the door of the sleeping appartment should be locked, and the window so arranged as to prevent egress. It has been recently suggested that sleep-walking may be cured by placing by the side of the sleep-walker's bed a strip of sheet-iron, tin, zinc, or other metal of such length and width that when he puts his feet out of the bed they will rest upon the metal. It is claimed that the sensation produced by contact with the cold metal will awaken the person. A strip of wet carpet has been successfully used in the same way. We have known several instances in which somnambulists have narrowly escaped death from falling from a high window, being caught and restrained just in time to prevent the catastrophe.

HOMESICKNESS, OR NOSTALGIA.

Although homesickness is generally regarded as a mere notion on the part of the patient, it is, in reality, in many cases, a disease, and should be treated as such. Cases have occurred, in which, through the depressing influences of nostalgia, the most disastrous results have occurred. Patients generally lose appetite, become sleepless, greatly debilitated, and sometimes sink into a state of melancholia.

Treatment.—The proper treatment of homesickness includes mental and moral, as well as medical, measures. The patient should not be lectured and scolded for his strong desire to return home, although he should be encouraged to exercise as much self-control and restraint over his feelings as possible. Pains should be taken to divert his attention from the cause of his depression by means of amusement, diversion of mind, variety of diet, and surrounding him with as many favorable conditions as possible. In the majority of cases, the difficulty will disappear after a few weeks, though it may persist for some time.

HYPOCHONDRIA.

This disease derived its name from the supposition that it was dependent upon disease of the liver. The malady assumes a great variety of forms. The patient is generally moody and desponding, the degree of sadness sometimes being so great that nothing will provoke a smile. The patient imagines himself to be the victim of almost any number of incurable diseases. If the mind is relieved of one cause of apprehension, some other equally groundless one will be quickly discovered. Hypochondriacal patients seldom sleep well. They exhibit in their minds great want of resolution and lack of mental force and vigor. Their circulation is generally poor, hands and feet being nearly always cold. The digestion is disturbed in nearly all cases.

Causes.—A very frequent cause of hypochondria is sexual excesses in youth, the consequences of which, though bad enough, are sometimes immensely exaggerated. An inactive condition of the liver, derangement of the digestion, nervous debility, and various other functional disturbances of the body, may give rise to hypochondria.

Treatment.—It is important that this affection should receive prompt and thorough attention, as, in many cases it is a precursor of insanity. When taken in its early stages, almost every case is curable by proper measures, which consist in removing all the real causes of the af-

fection, and then endeavoring to convince the patient of the non-existence of the imaginary evils. When the digestion is disturbed, such treatment as has been recommended for the various forms of indigestion should be applied. The same should be done in case the liver is affected. Nervous debility requires the treatment which has been recommended for this condition. In many cases, traveling will be of great benefit to the patient, though this is not to be recommended in all cases. If the difficulty does not disappear in a short time by the carrying out of the above suggestions, an intelligent physician should be consulted.

INSANITY.

This is an affection which has given rise to an immense amount of discussion among physicians, philosophers, and moralists, from the earliest ages down to the present. Mental derangement has been universally considered one of the most terrible calamities which could befall an individual. The exact nature of the disease, however, was never thoroughly understood until the darkness which surrounded it was dispelled by the modern investigation of the subject. The old idea of insanity held it to be a disease of the mind or soul. This theory is no longer tenable, however, in the light of modern investigations respecting the nature of the mind and its relation to the brain. As has been elsewhere shown, see page 137, mind is simply the result of the activity of the brain, although it cannot be called a secretion, as it has been termed by some. It is just as much a result of the activity of the cells of the brain, or of certain parts of it, as the bile is a result of the activity of the cells of the liver, or gastric juice of the cells of the peptic glands. So-called mental disease is really disease of the mind-producing organ, or the brain. Thus, properly speaking, insanity is not a disease of the mind, but of the brain itself. This theory is amply sustained by hundreds of post-mortem examinations which have been made at institutions for the insane, where the most thorough and full investigations of this subject have been carried forward. The general principle can now be well sustained that every case of serious mental disease is accompanied by certain definite changes in the substance and cell structure of the brain, and the amount and character of the mental disorder is exactly proportionate to the nature and location of the tissue-changes in the brain.

Insanity has been variously defined by different authors, and the great diversity in the definitions given suggests very strongly the fact

that an absolutely perfect definition, which shall include all cases which properly belong under this head, without including any others, is impossible A late writer on the subject defines insanity as being "a manifestation of disease of the brain, characterized by a general or partial derangement of one or more faculties of the mind, and in which, while consciousness is not abolished, mental freedom is perverted, weakened, or destroyed." One of the greatest obstacles which is presented in the study of insanity is the difficulty of distinguishing between natural eccentricity and real mental derangement. There is no sharp dividing line between the cases in which mental derangement may be so slight that the individual is simply said in popular phrase to have "a kink in the head" or, as in Scotland, "a bee in the bonnet," and those in which the mental disorder is so pronounced as to render the individual incompetent to perform the ordinary duties of life. In other words, it is often very difficult to say whether an individual is really insane, or whether he is exceedingly odd, or eccentric. Some have even gone so far as to say that entire sanity is much more rare than some degree of insanity. Perhaps this is an extreme view of the matter, but it may safely be said that there are far more insane people engaged in the active duties of life, following their accustomed vocations, with greater or less success, than are found within the walls of lunatic asylums.

Certain symptoms which are present in cases of insanity should be defined, in order to render a description of the disease intelligent. The principal are *illusion, hallucination, delusion, incoherence* and *delirium.*

Illusion is a false, exaggerated, or perverted perception of something which is really appreciated by the senses; for example, the patient, seeing a small object moving across the floor, may think it to be a mouse or a reptile, having an illusion of sight. A person suffering with illusion of the sense of hearing, may pervert the gentle patter of rain into a conversation held between two persons in a neighboring room. The sense of touch, taste, smell, etc., may all be subject to illusion. This is not by any means a positive symptom of insanity, as the best of us are subject to illusion at times, and it has been very sagaciously suggested that it is nothing more than probable that we never appreciate objects exactly as they are, that our senses never inform us with absolute correctness, perhaps, of the objects with which we come in contact. This accounts for the difference in individual judgments in some matters, and in the judgment of the same individual at different times.

Hallucination.—This is a false perception which has no foundation whatever, originating entirely within the brain. The perception is wholly imaginary, and not, as in the case of illusion, a simple perversion of a real perception. A person affected with hallucination sees pictures and images upon a blank wall. He imagines himself surrounded by various persons or objects when he is quite alone. A very curious fact is that persons who may be absolutely deprived of any of the senses may suffer with hallucinations of the lost sense; as, for instance, a woman who had been totally deaf for years, being unable to perceive the loudest noises, not noticing even the firing of a cannon, when suffering with hallucination, was constantly troubled with voices whispering in her ears.

Delusion.—A person may suffer with both hallucinations and illusions and yet be perfectly aware of the imaginary character of his perceptions; but when the mind is so affected that hallucinations and illusions are considered as realities, the individual is subject to delusion. Although delusion is a much more serious mental derangement than either illusion or hallucination, it is by no means a positive test of insanity, as it has often been considered to be, by both legal and medical authors. As a recent writer remarks, if delusion were a test for insanity, "one-half of the world would be trying to put the other half into lunatic asylums."

Incoherence.—An individual is incoherent when he puts words together without proper relation to each other, so that they do not make sense.

Delirium.—Delirium is a condition of the mind in which all the previously mentioned symptoms are present, together with inability to sleep, active pulse, and great restlessness. It is very common in acute fevers.

Mental disease assumes a very great variety of forms, according to the different portions of the brain affected or the different faculties involved. We shall not attempt to go into an elaborate consideration of the subject, however, but will briefly call attention to some of the most common forms of the disease, which are termed *mania, melancholia,* and *dementia.*

Causes.—The causes of insanity include all of the numerous causes to which attention has been called in the first part of this section, as productive of nervous disease. Anything which tends to interfere with the nutrition of the brain may become a cause of insanity.

Among the special causes, may be mentioned excessive mental exertion, powerful emotions, unrestrained passions, sexual excesses, disorders of the digestion, the use of opium, alcohol, and tobacco, general disorders of the system, disease of the kidneys, liver, and other internal organs, organic disease of the brain, spinal cord, etc. One form of insanity makes its appearance during pregnancy, or after childbirth. It seems to be dependent upon this particular condition. Religion has been charged with producing insanity in persons who have given themselves up to religious exercises in an immoderate degree, but we seriously doubt whether genuine religion is in any case the real cause of mental disease. Religious fanaticism may lead to insanity, if, indeed, it may not be considered one form of mental disease. We have found by careful investigation of a number of cases of so-called religious insanity, that some other cause really lay at the foundation of the disorder, as unrequited affections, disappointment in love, or some other condition in which the emotions were strongly involved; loss of sleep; long standing nervous disease, etc.

In not a few instances, we have found the real cause of so-called religious insanity to be self-abuse; indeed, we are thoroughly satisfied that sexual excesses are responsible for a much larger proportion of mental disease than is generally supposed to be the case. Heredity is also a very common cause. It has long been thoroughly established that a tendency to insanity runs in families. The children of epileptics are likely to be insane. The notable increase of insanity is one of the most alarming features of the times. At the present time there are more than forty thousand lunatics, recognized as such, in the United States, while there is, undoubtedly, a much larger number of individuals who are suffering with a moderate degree of mental disorder, but have thus far been able to escape detection.

Mania.—In this form of mental disease nearly all the mental faculties are generally affected. The patient suffers with illusions, hallucinations, and delusions. The controlling influence of the will over the mental faculties is lost. The patient is subject to impulses of various kinds. The mind may be either morbidly excited and exalted, or in the opposite condition. The disease generally begins with depression and a disposition to be alone, sleeplessness, symptoms of dyspepsia, and of other derangements of health. The patient complains of pain and fullness of the head, confusion of thought, and the usual symptoms of congestion of the brain. He also manifests irritability

of temper and such peculiarities of behavior as are likely to attract the attention of friends, and arouse a suspicion that something is wrong with him. As the disorder becomes fully developed, mental disturbances make their appearance, and may assume almost any form, from simply harmless delusions or hallucinations to an uncontrollable disposition to commit violence upon himself or upon his attendants. There is generally a marked change in disposition. The patient will frequently hate, with great intensity, persons and things for which he has entertained great fondness. A mother will conceive a desire to kill her child, a husband to take the life of his wife. More often, however, the disposition to violence is turned upon the individual himself, as in suicidal mania. A person suffering with acute mania has a frequent, feeble pulse, and sometimes some fever. Speech is noisy and incoherent; he will often refuse to eat or drink, making it necessary, in many cases, to employ force in order to prevent starvation. Mania may become chronic, though it has a general tendency to recovery. Finally the most active symptoms subside, some settled delusion taking possession of the patient. When recovery takes place, it is generally within a year and a half or two years. The longer the disease continues after two years, the less the likelihood of recovery. When the disease continues for a long time, there is generally a gradual loss of intelligence which finally results in dementia or imbecility.

Melancholia.—This is one of the most terrible forms of mental disease. Like mania, it is preceded by premonitory symptoms which are essentially the same as those given for the disease just described. Patients suffer with many of the symptoms of mania, but, as a general rule, there is less activity. The state of depression continues. The patient seldom develops violent symptoms; he is usually passive and easily controlled, but is haunted continually by hallucinations and illusions, often of the most terrible character. Melancholia, when attended by paralysis or imbecility, is an almost hopeless disease. It usually terminates in dementia.

Dementia.—This is a condition toward which all forms of insanity tend. There is a general loss of intelligence, or failure of all the mental powers. When confirmed, it is an entirely hopeless condition.

PARESIS, OR GENERAL PARALYSIS OF THE INSANE.

The symptoms of this disease are slight trembling of the hand, especially when extended, and of the tongue, when protruded, and lips, when

peaking. There is a marked change in character and disposition. The patient is subject to extravagant delusions, speech is thick, gait is shuffling and resembles that of a drunken person; in an advanced stage of the disease, convulsions may appear. The disease lasts from a year and a half to four years. It is almost certainly fatal. The principal causes are intemperance and dissipation.

Treatment.—There is probably no disease in the treatment of which so marked improvements have been made in modern times as in the case of insanity. In ancient times, and, indeed, in times very near to the present, the insane have been treated like wild beasts. As soon as evidence of mental disorder was discovered, they were considered at once as doomed, and no efforts made to ameliorate their condition. Many times they were treated with great inhumanity and cruelty. Indeed it has only been within the last century that the treatment of insanity has been made, in any degree, rational; and often, at the present day, there are evident opportunities for further improvement. It is of great importance that the first beginnings of mental disease should be detected; hence every individual should become, to some extent, intelligent on the subject. When a person shows, in a marked degree, any of the symptoms above mentioned, he should be carefully watched. If the individual himself feels strange impulses, and an almost uncontrollable disposition to take his own life, or do violence to others, he should at once consult an intelligent physician, or put himself under the watchcare of some one sufficiently intelligent to care for him. There is good reason for believing that no small proportion of the crimes of violence committed are due to temporary or obscure mental disorders.

In the treatment of the insane, attention must be given to every function of the body, as well as to that of the brain, since the disease of the brain often depends upon disease of other organs. Disease of the digestive organs, producing malnutrition of the brain, is one of the most common of all causes of insanity, and we doubt not that many who are now inmates of insane asylums might have been readily cured, had this fact been recognized and the difficulty removed at the outset. We have treated quite a number of cases in which the patient had been confined for a longer or shorter period in an insane asylum, and by giving attention to improvement of digestion, thus securing better nutrition of the brain and nervous system, have succeeded, in nearly every instance, in restoring the patient to complete mental soundness.

In women, the condition of the reproductive organs should receive particular attention, as local irritation in these organs not infrequently occasions the most serious mental aberration.

The question of confinement in an asylum is one of very serious moment. It is often decided without a careful consideration in all its bearings. When the condition of the patient is such as to make physical restraint necessary, and when this cannot be secured at home, together with intelligent medical supervision, or when the disease is so thoroughly confirmed that the prospect for recovery is exceedingly small, undoubtedly confinement in a well regulated asylum is the best disposal that can be made of the patient; but when the individual has still sufficient intelligence to appreciate his condition, it seems as though confinement in an asylum with large numbers of other individuals, suffering with all the grades of mental disease, must be, in a high degree, detrimental to the patient's recovery, especially when the aversion to such confinement is exceedingly strong on the part of the patient. These difficulties exist, of course, in a much less degree in small institutions, where but very few patients, or only cases of a mild character are received; but by far the most preferable plan, is that which has been for many years pursued in Holland, where certain country districts are devoted to the treatment of the insane, patients being placed separately in the families of farmers who are employed to care for them under competent medical directors. Not more than one or two patients are generally received into a family; and they are treated as members of the household, and are thus saved from the possibility of any sort of damaging influence from asylum confinement and restraint, and especially the contact with other individuals in a condition similar to, or worse than, their own.

In acute mania, in which there is marked congestion of the brain, the treatment elsewhere prescribed for congestion, or hyperæmia, of the brain should be administered. The patient should be kept as quiet as possible, the diet should be nutritious but unstimulating. If the fever is considerable, the patient should have frequent sponge-baths. If he will not submit to treatment, the cool air-bath can be readily administered with good effect. When it becomes necessary to employ drugs for the purpose of controlling the mental excitement, bromide of potash is to be preferred to almost any other, but no drug should be administered without the advice of a physician. In addition to all other remedies which may be employed, mental and moral treatment

should not be neglected. Efforts should be made to cultivate the patient's will-power and self-control, and lead him to appreciate his condition and to co-operate with the treatment as far as possible. Thanks to the modern advances in the management of this affection, it is now by no means so hopeless as it was formerly supposed to be; and by perseverance in the proper line of treatment, a large number of recoveries may be hoped for, especially if early attention is given to the disease.

In conclusion, we wish to remark, that from a personal acquaintance with the superintendents of a number of large State asylums for the insane, we are thoroughly convinced that the prejudice which in some parts prevails against these institutions is altogether unfounded. The numerous stories which are circulated respecting the cruelties practiced in the management of patients are generally put in circulation by patients who have been discharged before complete recovery has taken place, and are generally unreliable. Superintendents of insane asylums are, as a rule, humane and kind-hearted men, and do all in their power for the relief of patients under their charge.

IDIOCY AND IMBECILITY.

Idiocy is a condition of mental deficiency existing from birth, the individual being born with a deformed or undeveloped brain, just as persons may be born with deficient development of the limbs or of any other part of the body. The mental deficiency is shown by an unusually small head, which is very much flattened in front, the average diameter of the head being about thirteen inches, or five or six inches less than usual in health. Various other physical deformities are also present, as deficient development of the teeth, protrusion of the upper jaw, giving the child an ape-like appearance. In some cases the resemblance to sheep or monkeys is very great. The degree of mental development in idiots is often much less than that of the higher animals. Their habits are exceedingly filthy, the natural instincts which characterize the lower animals being apparently absent. In some cases, however, a considerable degree of intelligence is manifested in certain directions, such as ability to calculate correctly, a fondness for and appreciation of music, etc.

Cretinism is a form of mental deficiency in which goitre and other deformities are seen. It is found chiefly in certain parts of Switzerland, particularly in the deep gorges of the Valais, where it is supposed to be due to climatic influences, although its origin is not well understood.

Imbecility is a condition of mental weakness which comes upon an individual born with a healthy brain. It frequently follows infantile convulsions. It is very often the result of softening of the brain, or hydrocephalus. All degrees of mental deficiency are shown by imbeciles. They generally eat voraciously, are very mischievous in disposition, frequently destroying whatever they can get their hands upon. Imbeciles do not show the peculiar deformities noticeable in idiots, being born in a normal condition.

Much attention has been given to the study of the causes of idiocy and imbecility. The best authors attribute idiocy chiefly to two causes,—intemperance and marriage of relatives. Plenty of instances have been observed in which idiotic children are the offspring of intemperate parents. Morel, who has investigated this subject very thoroughly, shows the connection between habits of vice and intemperance and idiocy as follows: "In the first generation there is alcoholism and immorality; in the second, hereditary drunkenness, maniacal outbursts, and general paralysis; in the third, sobriety, homicidal mania, melancholia, confirmed mania, homicidal tendencies; in the fourth, feeble intelligence, stupidity, early mania, idiocy, and, finally, extinction of the stock."

Statistics have also been collected to show that the marriage of nearly related persons, as of cousins, has a marked tendency to produce idiocy in the offspring. Recent investigations have shown that this tendency does not necessarily exist on account of individuals being relatives, only as each one possesses similar tendencies, which, by combination, are intensified. The danger in the marriage of relatives is that some lurking tendency of this kind will be, by intensification, brought out in the children. Fortunately, idiots and imbecile persons are usually sterile. A peculiar form of imbecility of a very low grade is produced in children by the use of narcotics, as of "Mrs. Winslow's Soothing Syrup," and similar quack nostrums containing opium.

Dr. Archibald, superintendent of the State asylum for feeble-minded children, asserts that he has found, by careful investigation, that self-abuse is a cause of a very large proportion of the cases of imbecility which come under his care.

Treatment.—Notwithstanding the apparently hopeless character of these cases, much has been done in modern times to ameliorate their condition. It has been shown, by actual experiment, that almost every case may be in some degree benefited by a persevering course of training, with good treatment. The most hopeful cases are those which are healthy in other respects, being free from epileptic fits, paralysis, and

other serious diseases of the nervous system. The prospect is most favorable when treatment can be begun at an early age, preferably not later than twelve or thirteen years. In several parts of this country, as well as in England, there now exist excellent institutions for the treatment of the feeble-minded, in which a systematic course of instruction and training is carried out, the excellent results of which are seen in many cases, by the rescuing of clouded intellects from almost total mental oblivion to a condition in which the individual is able to support himself by some form of simple labor. There is a marked tendency on the part of idiots and imbeciles to form vicious habits. Some years ago, we saw in a large hospital in New York City an idiot who was suffering with the worst form of venereal disease.

LEAD PALSY—WRIST-DROP.

Various nervous symptoms arise from poisoning the system with lead. These may be either slight or extremely severe. Among slight symptoms may be mentioned headache, dizziness, fullness and constriction of the head, all of which symptoms are aggravated by mental work. In many cases tremor is present, especially in the hands. The trembling is sometimes extensive, but generally consists in simply slight tremulous motions, especially when the muscles are contracting. In severe cases of lead poisoning, the patient may suffer with delirium, convulsions, or coma. One of the most common of all symptoms arising from lead poisoning is colic, which generally precedes the more severe phase. Lead paralysis, the subject of this article, is simply one of the symptoms which arises from plumbism, or poisoning from lead. The most common form of paralysis is what is termed "wrist-drop," in which the extensor muscles of the arm are paralyzed so that the patient cannot extend his arm or raise the wrist. The paralysis also extends to the flexor muscles, or those on the inside of the arm, as well as those on the upper side, but in a less degree. When the disease continues for some time, wasting of the muscles occurs and various distortions of the limb through contraction. The muscles of the limbs are also liable to be affected, as well as the muscles of respiration and other groups of muscles. The sensibility of the skin is rarely affected. Paralysis occurring through lead poisoning is distinguished from that originating otherwise by the fact that the individual has been exposed to this cause, and especially by the appearance of a bluish line around the edges of the gums. This disease occurs most often in persons who work with lead, as lead founders,

manufacturers of lead paint, painters, plumbers, printers, etc. Lead poisoning is also frequently produced by drinking water which has passed through lead pipes, or which has been stored in lead-lined cisterns or tanks, or collected from roofs covered with lead or lead-tin, or kept in vessels of lead or lead-tin. Smokers are exposed to lead poisoning by the use of cigars which have been wrapped in lead foil. The use of hair dyes containing lead is another very common cause of lead poisoning. In a case which we met some time ago, lead paralysis was produced in a young lady by the use of lead paint as a cosmetic. The use of lead plasters and lotions applied to ulcers or other surfaces, has resulted in lead poisoning.

Treatment.—In a majority of cases, this affection can be cured, provided the cause is removed. The use of electricity is indispensable, and, in bad cases, the galvanic current must be applied, as in most cases the paralyzed muscles cannot be made to contract by the faradic current. It is necessary to employ very strong currents in order to produce contraction. When contraction cannot be induced, the case is a hopeless one. Every attention should be given to the improvement of the general health. It is claimed that lead may be eliminated from the body by the use of iodide of potash. This drug should not be employed except under the care of a physician. Electricity may be used with benefit as often as every other day. It should be accompanied with shampooing, massage, and passive movements of the affected muscles. When contractions have occurred, various mechanical devices are sometimes necessary. Characteristic nervous symptoms are produced by the introduction into the system of mercury, arsenic, and various other drugs, the symptoms of which are described elsewhere.

ALCOHOLISM.

SYMPTOMS.—Tremor, and unsteadiness, especially of the upper extremities, after a time of the lower limbs, most marked in the beginning; loss of muscular power; great nervousness, which is temporarily relieved by alcoholic liquors; insensibility of skin; affections of the sight, hearing, smell, and taste; in some cases, convulsions of an epileptic character; spasmodic twitching of the muscles; greatly exaggerated nervous irritability; great irritability of temper; loss of intellectual and moral capacity.

The above are but a few of the train of symptoms which are present in the chronic form of alcoholic poisoning. These symptoms may occur only after the long-continued use of alcoholic liquors or after a short continuance of the habit, according to the temperament and other

conditions of the individual. The proper treatment consists in abandonment of the exciting cause, and improvement of the general health. Simply diminishing the quantity of liquor taken, will have little effect to relieve the disorders present in this disease. The patient must abstain entirely from the use of this subtle poison.

DELIRIUM TREMENS.

SYMPTOMS.—At first, loss of appetite, nausea, and vomiting, especially in the morning; either diarrhea or obstinate constipation; tongue coated and dry; great debility; pulse feeble and rapid; skin cold and moist; sleep unrefreshing, and disturbed by frightful dreams; patient generally wakeful; in most cases, headache and dizziness; more or less mental disturbance; confusion of ideas; trembling of the muscles, first noticed in the tongue when protruded. When fully developed, wild expression on the face; hallucinations, illusions, and delusions; patient frightened by horrid fancies, as of reptiles and errifying objects seen all about him; entire absence of sleep; considerable fever; extremities cold; head greatly congested; patient talks incessantly; pupils strongly contracted; in some cases, convulsions.

Delirium tremens, although generally produced by the use of alcohol, is also sometimes occasioned by the use of tobacco, all the characteristic symptoms being present. The condition is one of intense poisoning of the nervous system, the nutrition of which is greatly interfered with. In delirium tremens from the use of alcohol, there is always present great congestion and often inflammation of the stomach, sometimes rendering the patient unable to retain food. In some cases the patient suffers with incessant vomiting for several days. The attack generally continues from three to five days. Ability to sleep is a very favorable symptom, as the patient generally awakes feeling refreshed.

Treatment.—The treatment of this disease by means of opiates, large doses of bromide of potash, chloral, etc., is very often unsuccessful, especially in severe cases. The best treatment consists in keeping the patient as quiet as possible, applying ice or cold pours to the head. The cold shower bath may be employed with advantage when the fever is high and cerebral congestion very great. When the patient refuses to eat, his strength may be sustained by the use of nutritive injections. See page 738. There is usually such a high degree of inflammation of the stomach that food will not be digested if eaten; and it would probably be well to adopt this plan of feeding in nearly all cases. The patient should be kept in a darkened room, and guarded against all avoidable disturbances. Great exhaustion results from

the violent muscular exertion generally made by the patient; these should be restrained as much as possible. When a sufficient number of attendants cannot be secured to hold the patient in bed, the arms and feet may be tied together by means of wide bands, as towels or sheets, thus rendering the patient much more easily controllable. When necessary, the straight jacket, shown in Fig. 323, which is frequently used in insane asylums, may be employed.

In the effort to reform persons who have been addicted to drink, the idea should not be entertained that any substitute for liquor can be found. Anything which would be a substitute for its effects would be equally as bad as the liquor itself. The much advertised "Cinchona Cure" is an unmitigated fraud. As prepared by Mr. D'Unger, the professed discoverer, it is simply an alcholic liquor, flavored with "red bark," one of the varieties of the Cinchona tree, from which quinine is obtained. Prof. Earle, physician to the Washingtonian "Inebriates' Home," in Chicago, has recently exposed the matter in a Chicago medical journal. He has traced the after-history of a number of drunkards whom D'Unger publicly claimed to have cured; but nearly all of whom have since been under Dr. Earle's treatment at the "Inebriate's Home." Not a single one was in the least degree improved by the "Cinchona Cure." Some of his mixtures contain as high as twenty-four per cent of alcohol, a larger proportion than is found in ale, or most wines. Prof. Earle gives it as his opinion that the "Cinchona Cure" has made more drunkards in Chicago within the past year than any one of the saloons in that city.

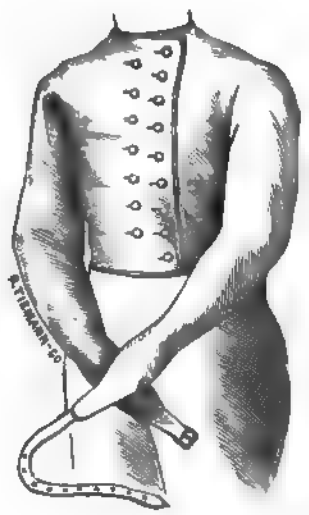


Fig. 323. Straight Jacket

THE OPIUM HABIT.

As in the case of inebriety, opium-taking is at first merely a habit, but finally develops into a formidable disease. The morbide condition established by the long-continued use of opium is, if possible, even more serious than chronic alcoholism. This disease has been very appropriately termed opiism, or opiomania. The habit is in-

duced in the majority of cases by the use of opium for the purpose of relieving pain or inducing sleep. For a number of years past, we have had, almost constantly, patients under treatment for the relief of this habit, and in tracing the history of these cases we have, in every instance, found that the habit had originated with a physician's prescription. This fact, together with many others to which attention has been called in the section on stimulants and narcotics, has convinced us that physicians generally are culpably reckless in the use of this powerful, fascinating drug. Opium is certainly a boon in cases in which it is absolutely required; but its use should be restricted as much as possible, and not resorted to when relief can be obtained by any other means. The suffering which patients generally undergo in their attempts to escape from the thralldom of this habit, are greater, in the majority of cases, than those for the relief of which the drug was originally taken. As a general rule, when the opium-taker begins to lessen the dose which has been gradually increased for a longer or shorter period, a great variety of morbid symptoms make their appearance. In many cases, obstinate vomiting or equally persistent diarrhea set in as soon as the daily dose is reduced. In other cases, the patient will be seized with violent sneezing. In still others, pains in the joints, or old neuralgic pains, to relieve which the opium was originally taken, render the patient almost distracted with suffering. But that of which these unfortunates complain most bitterly is a peculiar indefinable sensation, which is described by the patient as much harder to bear than actual pain.

Treatment.—The amount of opium which the system will tolerate after the habit has been continued for many years, is sometimes astonishing. We have had under treatment patients taking daily amounts varying from one or two grains of opium to forty-eight grains of sulphate of morphia, equivalent to more than half an ounce of the drug. In treating these patients, especially those by whom the quantity consumed was very large, the physician's skill and patience are often taxed to the utmost. In beginning the cure, it is of the first importance to convince the patient that much will depend upon his own efforts. His will-power and fortitude, which invariably become sadly demoralized by the long subjection to the habit, must be stimulated as much as possible. He must be taught the necessity of patiently bearing some pain, and enduring a considerable degree of suffering. This is often hard to do, as the fortitude to bear pain is, in most cases, almost wholly lost. In the

further carrying out of treatment, we have adopted several plans with success. In some cases, especially those in which the quantity of opium or morphia taken daily is not very large, we have obtained very excellent results by withholding the drug altogether for two or three days, or until the patient was entirely out from under its narcotic influence.

By this time, the sufferings of the patient will become considerable, and a small dose is then administered. It is found that a very small dose indeed, after the patient has abstained for two or three days, will generally produce as much effect as was produced by the full dose at the beginning of the treatment. After a day or two, the same process is repeated, each time the quantity of opium administered being diminished until finally it is left off altogether. When the patient has a great deal of will-power, and is willing to make the attempt, especially when the amount of opium taken is moderate, the drug may be wholly discontinued from the first. In general, however, it is better to diminish the amount of the drug by degrees, quite rapidly at first, and more slowly afterward. This should not be left to the patient, however, as very few have the moral courage to conduct the treatment successfully. The patient should be deprived of every particle of the drug, and of all means of access to it, and the daily amount should be administered at a regular hour each day in a gradually diminishing quantity. We have, in some cases, slowly diminished the quantity of the drug until it was finally left off entirely without the patient being aware of the change. In one case, the hypodermic injection of pure water was continued for several weeks, producing precisely the same effects which had before been produced by the usual dose of the drug, illustrating the powerful effect of the imagination upon the body. We have found the employment of electricity in the form of galvanization of the spine, general faradization, electro-thermal baths, together with massage, warm baths, and other hygienic measures, of very great use in mitigating the sufferings of patients undergoing cure of the opium habit.

THE TOBACCO HABIT.

This habit, when thoroughly fixed upon an individual, is scarcely less difficult of abandonment, in many cases, than the use of opium. Some persons are able to enounce their accustomed pipe or cigar at once, even after the habit has been indulged for many years, while others are only able to succeed after repeated attempts. We do not need to consider here the evil results of the tobacco habit, as the subject has been thor-

oughly discussed under the head of "Stimulants and Narcotics," to which the reader is referred.

Treatment.—The secret of success in the treatment of the tobacco habit, is in relieving the system entirely from the influence of the drug as quickly as possible. This is best done after the patient has discontinued the habit, by the use of hot-air, vapor, Turkish and Russian baths, or by the use of the wet-sheet pack. The last-named remedy is quite as effective as any of the others. The odor of nicotine can be distinguished in the perspiration of a patient long accustomed to the use of tobacco, for several days after the habit has been discontinued. Electricity, preferably in the form of galvanization of the spine, fomentations to the spine, leg baths, with cold applications to the head, fomentations over the stomach and liver, and frequent dry-hand rubbing are very effective measures of allaying the nervousness from which many patients suffer, after dispensing with their usual quid or cigar. We have treated hundreds of patients for the tobacco habit, and have rarely failed to obtain complete success by the above measures, well backed up by the co-operation of the patient, within a week or ten days. Substitutes for tobacco are utterly worthless. As was remarked with reference to substitutes for alcoholic drinks, anything which would produce the same effect would be equally detrimental, and nothing else would be accepted by the tobacco-user as a substitute. The so-called substitutes which are now sold quite extensively, undoubtedly contain a considerable proportion of tobacco. At least, this has been the case with those we have examined.

THE TEA AND COFFEE HABIT.

Individuals sometimes become as thoroughly enslaved to the use of strong tea and coffee as do other persons to the use of tobacco, liquor, or opium. An English physician has recently called attention to the fact that "tea-drunkards" are becoming quite common among ladies in that country. The effects of the tea-and-coffee habit have been fully described elsewhere. The treatment consists in their thorough abandonment, with the determined resolution never to resort to their use under any circumstances. Most persons can readily overcome the habit by gradually diminishing the strength of the beverage, and then substituting wheat or bran coffee, crust coffee, clover tea, or some similar drink equally innocent. The severe headache, lassitude, and general depression, of which ladies sometimes complain when deprived of their accustomed

cup of tea or coffee, affords the strongest evidence of the injurious effect of these beverages.

These symptoms may generally be relieved by the application of fomentations to the back of the neck or shoulders, with a hot foot bath, and fomentations over the stomach. The application of either form of electricity to the back of the head or spine will also generally give speedy relief to these symptoms. If nothing whatever is done, they will soon vanish, and the improvement in digestion, in nerve power, and in many other directions, will soon convince patients of the injury which they have suffered from these useless and harmful drinks and the benefit to be derived from their disuse.

FATTY DEGENERATION OF THE NERVES.

This is a morbid process in which the proper nerve substance is gradually removed, fatty particles being deposited in its place. A nerve which has undergone fatty degeneration has lost its power to transmit nerve sensations or nerve force. Nerve cells undergo this process, as well as nerve fibers, thereby losing the power to generate nerve force. An organ, the nerves of which have undergone fatty degeneration, is paralyzed. The same is true if fatty degeneration has taken place in the nerve centers from which the nerve supplying the organ originates. Softening of the brain is a form of fatty degeneration. A nerve which is cut off from its connection with the nerve centers generally undergoes this change in a short time. Nerves which are not used, in consequence of paralysis from injury to some part of the brain, often rapidly undergo degeneration. The causes of fatty degeneration of the nerves, are the use of alcoholic liquors, the use of tobacco, gluttony, habits of dissipation, deficient exercise, and various diseases.

Treatment.—The treatment is chiefly preventive, since repair of the nerves is impossible when extensive changes have once taken place. The use of electricity, and systematic exercise of all the paralyzed parts, are the best means for preventing or checking the progress of this disease.

DISORDERS OF SPEECH.

We have already considered loss and impairment of the voice from disease of the vocal apparatus and from paralysis of the nerves which control the muscles of speech, under the head of "Aphonia." We have now to consider other disturbances of speech which arise from disease of

some part of the nervous apparatus involved in speech production. Of the numerous disorders which have been described by systematic authors we will mention some of the most important.

Aphasia.—This is a condition arising from a disease of the brain which occasions loss or impairment of the idea of language or its expression. It differs from aphonia in that in the latter disease, speech is impaired or lost from disease of the vocal apparatus, although the memory of words and the power of expressing them by writing remains unimpaired, while in aphasia the vocal apparatus remains intact, but the memory of words and the power to use them is destroyed or impaired.

The most common cause of aphasia is injury to the brain from apoplexy. The portion of the brain supposed to be injured in these cases is a part called the "island of Reil" of the left side of the brain. It is thought that the memory of words and control of the organs of speech reside chiefly in the left side of the brain, from the fact that in nearly all cases in which aphasia results from injury of the brain, examinations after death have shown the injury to be on the left side. This is not always found to be the case, however, and it is probably true that both sides of the brain possess this faculty, but that from force of habit, the left side is chiefly used, just as one eye, one hand, or one ear is generally employed in preference to the other. It has been claimed that in right-handed people aphasia is due to injury of the left side of the brain, while in left-handed people it is to be attributed to injury on the opposite side, owing to the well-known anatomical fact that the nerves of the right side of the body originate in the left side of the brain, and vice versa.

A person suffering with aphasia may be unable to utter a syllable, or may simply be deprived of the power of using words correctly. Sometimes the power of speech will be lost, while the memory of words remains, so that an individual can write as well as ever. This is not generally the case, however. Patients are sometimes aware of their inability to use words correctly, and at other times seem to be wholly oblivious to the mistakes they are constantly making. We recently had under treatment a patient suffering with this difficulty as a result of apoplexy. If she wished to say door, she was much more likely to say chair, table, carpet, or window. Apparently aware of the mistakes made in speaking, she often repeated a long list of names, hoping to find the right word. If the desired word was suggested to

her, she would at once recognize it, and would repeat it without difficulty. Aphasia sometimes results from epilepsy, hysteria, and various other functional disturbances of the brain.

Treatment.—The treatment of aphasia consists chiefly in the treatment of the cause from which it arises. Unfortunately, this cannot always be removed, so that in many cases complete recovery is impossible. However, much benefit may often be derived from a persevering effort to cultivate the speech organs of the opposite side of the brain, which may, in many cases, by long effort be developed to a considerable degree of utility. In order to accomplish this, it is often necessary to pursue a course of systematic instruction, beginning with the letters of the alphabet, the names and significance of which must be learned as in first learning to read. The application of electricity, both galvanic and faradic, to the tongue and muscles of the throat is a remedy of considerable value. Functional aphasia can be entirely cured by relief of the difficulty upon which it depends.

Stammering.—This difficulty is an inability to pronounce letters properly. This is sometimes the result of defects in the organs of speech, such as cleft palate, paralysis of the soft palate, tongue-tie and other deformities of the tongue, hare-lip, deformity of the teeth, etc. Enlarged tonsils may also be included among the causes of stammering. The difficulty is also not infrequently acquired. It naturally exists in children, in whom, as well as in cases in which the difficulty is very considerable, it is termed "lalling." A very frequent cause of the acquirement of this form of defective speech, is talking "baby talk" to children, and thus preventing them from forming correct habits of articulation. The defects of articulation shown in the speech of children should never be imitated by their attendants. Great pains should always be taken to speak to them in clear and distinct tones, so that they may be led to form correct habits of utterance. This is very important, since it is impossible for most adults to utter many sounds which are not learned during early life, even though they might have been acquired at that time. The learned Kussmaul remarks that "no living man is able to pronounce the speech sounds of all the nations of the earth. A Lepsius may succeed in expressing them in letters, and a Bruecke may unravel the mechanism of their articulation, but it is beyond the power of even such erudite philologists to articulate them all." There is a great difference in the number of sounds possessed by different languages; for instance, the

number of consonant sounds in Hindostanee is forty-eight, more than double the number in the English language, which is but twenty. The Greek language contains but seventeen consonants, and some Australian languages are said to have but eight. Some languages are entirely wanting in whole classes of sounds; for instance, the languages of the Mohawks, Senecas, Hurons, and of a number of other Indian tribes, do not contain the sounds *p*, *b*, *f*, *v*, *w*, and *m*, and consequently have not the words "mamma" and "papa," found in almost all other known languages. According to Tylor, when the attempt was made to teach the Mohawks to pronounce words containing these letters, they declared that they would not make themselves ridiculous by attempting to speak with their mouths closed. This peculiarity of different languages is the occasion of the difficulty often met with by persons of different nations in attempting to learn the pronunciation of other languages; for example, the Chinese, having no *r*, in the attempt to pronounce the word "America," substitute an *l* for the *r*, and render it "Ja-ma-li-ka." The German language abounds in gutteral sounds, the French in nasal vowels, the Russian in hissing sounds, such as *tsch* and even *schtsch*. In Africa, tribes are found whose language abounds in clicking sounds, and certain tribes of Indians delight in the expression of grunting, gurgling, and chuckling sounds.

Treatment.—The treatment for stammering consists in the performance of a proper surgical operation, in cases in which the difficulty can be remedied in this way, and proper training when the difficulty is due to acquired habit.

Stuttering.—Stuttering and stammering should not be confounded, as they are distinct forms of speech disturbance. In stuttering, there is no lack of ability to pronounce sounds distinctly, but a want of power to combine sounds together in forming syllables and words. Single sounds can be articulated without difficulty, but when the patient attempts to speak, an impediment occurs. The impediment consists in spasmodic contraction of some of the muscles involved in the production of sounds. The impediment may show itself as soon as the patient begins to speak, or not until several words have been uttered. It is most likely to occur when the word which the individual attempts to pronounce begins with a consonant, especially with an explosive sound. In very severe cases, the sufferer, in his attempts to utter an explosive sound, sometimes works himself into a state of great agitation, his heart palpitates, his face becomes red with conges-

tion, profuse perspiration breaks out, and he presents an almost maniacal appearance. The paroxysm often continues until it becomes necessary for the patient to take breath. When the attempt is renewed, or it may be just as the patient is almost exhausted, the refractory organs perform their function, and the required sound is produced. In mild forms of the affection, there is simply the repetition of particular letters or syllables.

This affection presents many peculiarities, among which is the fact that stutterers can often sing or whisper without difficulty. Many persons affected in this way have no trouble in speaking when alone, in the dark, or when with persons with whom they are intimately acquainted.

Anything which increases nervous excitability, greatly exaggerates the difficulty. In one case, the patient was entirely unable to speak a word when exhausted by a night's watching. Very frequently the stutterer will speak with perfect distinctness when asked to stutter. Stuttering is generally more marked in the morning than in the evening. In some countries the affection is quite common. Statistics show that in France there is one stutterer for every thousand persons, and in ten years nearly seven thousand persons were exempted from military service on account of stuttering. It is still more frequent in Germany. It is said that stuttering is wholly unknown in China, a fact which is undoubtedly due to the rythmical character of the language. A curious fact is mentioned by Colombat, who states that a Frenchman who learned Chinese was able to speak the acquired language with fluency, although he stuttered badly in his native tongue.

A tendency to stutter seems to be hereditary in families. The habit is often acquired by association with stutterers. It occurs about ten times as frequently in males as in females, and is most common in persons of nervous and excitable disposition.

Temporary stuttering is sometimes produced by dissipation, smoking, indigestion, loss of sleep, and other causes which produce great nervous exhaustion. Stuttering and stammering may be combined in the same individual, although the two diseases are distinct.

Treatment.—The treatment of this difficulty involves the removal of the causes, so far as possible, by the improvement of the general health, by tonic baths, nourishing diet, and exercise, especially lung gymnastics, Swedish movements, and tonic applications of electricity. The direct treatment of the disease itself begins with exercises in breathing. Some

require the patient to spend a week in absolute silence before beginning exercises of any sort. The first thing to be learned by the stutterer is how to fill his lungs completely, and then to expire it slowly and steadily. After this power has been acquired, the patient should be practiced in the pronunciation of all the different vowels, both singly and in combination. He must be made to speak them in loud tones, prolonged as much as possible, to speak them in a louder than ordinary voice, and in a whisper. He should also be taught to sing them, and to continue practice with each vowel in combination until he acquires perfect confidence in his ability to pronounce them all. This acquirement of confidence in himself is one of the essentials of treatment. Without it, a cure cannot be effected.

The next thing to be accomplished is the acquirement of power to combine consonants and vowels. This should be done by practice, first, in combinations in which the vowel comes before the consonant; and when this has been mastered, combinations in which the consonant comes first should be practiced upon. All the while the most careful attention must be given to the respiration. By degrees the patient will become able to pronounce words of one syllable, afterward the ability will extend to the pronunciation of words of two or more syllables, and then to combinations of words, and finally to sentences, periods, and paragraphs. Phrases and short combinations of words must first be spoken like words of many syllables. When the patient reaches this stage of improvement, he should be practiced in reading aloud, first poetry and then prose. After a time, he may be allowed to repeat short pieces of poetry or prose which have been committed to memory. After two or three months, a series of exercises should be given in which the pupil should be taught to keep time, speaking very slowly and giving to each syllable the same length, drawing breath whenever there is a grammatical pause. This regulated speech must be continued for months.

During all this time, the patient must never allow himself to speak otherwise than he has been taught to do in the exercises. When he finds himself unable to speak without stuttering, he should keep silence. The employment of measured or rythmic speech should be resorted to whenever he finds himself getting excited in conversation. Relapses are very likely to occur, which necessitate a new course of treatment.

Many mechanical devices have been adopted for the relief of stut-

tering. It is said that Demosthenes spoke with stones under his tongue. Little wooden plates, shaped like the lower jaw, "tongue forks," or "tongue bridles," and a great variety of other contrivances have been invented and used for this purpose. This plan of treatment is rarely successful and often does harm. It never effects a permanent cure. Various surgical operations have been performed for the relief of stuttering, but never with permanent benefit.

A peculiar affection somewhat resembling stuttering, known as *aphthongia*, has been occasionally observed. It consists in a spasm of the tongue, mouth, and jaw, whenever the patient attempts to speak. This difficulty is fortunately very rare, for no special means of relief has yet been devised.

SEASICKNESS.

SYMPTOMS.—Headache; dizziness; nausea and vomiting, with severe retching; great prostration.

This disease generally occurs in persons who are taking a voyage at sea, or on any large body of water. The symptoms exhibited are essentially the same in character and originate from the same cause as those which result from whirling, riding on the cars, or riding backward, being undoubtedly due to the disturbance of the brain, which results from the unusual and irregular impressions received from the senses of sight and touch. When occurring at sea, the disease is undoubtedly aggravated by the foul odors frequently present in the close, unventilated apartments of the ship. Undoubtedly, the rich and unwholesome food generally used on shipboard has much to do with the production of seasickness. Fortunately, the disease is very rarely fatal in itself, although the violent retching has, in some instances, produced hemorrhage from the stomach which has resulted in death.

Treatment.—A person preparing to take a sea voyage should eat very sparingly of the simplest and most wholesome food for at least three or four days before going on shipboard. After going on board, he should retire to his berth before the peculiar motion of the ship becomes in any very great degree noticeable. He should remain in a horizontal position most of the time for the first twenty-four hours, eating chiefly dry and very simple food, as graham or oatmeal crackers, dry toast with a little fruit. Liquids, if taken, should be either cold or quite hot. Slight qualmishness, if it occurs, may be relieved by swallowing a few bits of ice or taking a few sips of hot

lemonade. Nothing highly seasoned should be taken into the stomach during the voyage. Fried food, cake, pastry, lard biscuit, and all similar substances should be strictly prohibited. It is also best to abstain from the free use of meat. After the first day or two, it will be safe to venture upon deck. The precaution should be taken to protect the body thoroughly from the cold, moist air by warm wraps. Many persons find themselves entirely free from seasickness while upon deck, only feeling sick when confined within the close, poorly-ventilated apartments below. Wearing a tight bandage about the abdomen is recommended by sailors as a preventive of seasickness. Some physicians recommend the use of pickled oysters, ham, and smoked herring, and the free use of cayenne pepper, spice, and mustard, which advice we would earnestly exhort our readers to ignore.

DISEASES OF THE URINARY ORGANS.

SYMPTOMS RELATING TO DISEASE OF THE KIDNEYS AND BLADDER.

Retention of Urine.—This symptom occurs more often in males than in females, owing to the greater length of the urethra, or passage through which the urine escapes from the bladder. It frequently results, especially in females who are somewhat hysterical, from nervousness. In males, it may be the result of enlargement of the prostate gland or irritability of the urethra, causing contraction of the mouth of the bladder. The worst forms of retention are due to paralysis of the bladder, stricture, or permanent contraction of the urethra.

Treatment.—Mild cases of retention can generally be relieved by the prolonged warm sitz bath, and fomentations over the lower part of the back and abdomen. When retention is due to the spasmodic contraction of the urethra or of the sphincter of the bladder, relief may be often given by pouring a small stream of water into a vessel while the patient is making the attempt to pass water. With females, relief may often be obtained by giving the patient a vaginal douche when the attempt to pass water is made.

In case relief is not soon obtained by these measures, a physician should be called to relieve the bladder by means of a catheter, a small tube which is passed into the bladder through the urethra.

It is important to recollect that the bladder naturally requires to be relieved at least two or three times during the twenty-four hours, and more than a few hours should never be allowed to elapse without relieving it, as it may become paralyzed by over-distention. In case of severe injury to the head or the spine, apoplexy, and all conditions in which the patient is unconscious, or partially paralyzed, careful attention should be given to relieve the bladder at proper intervals.

Suppression of Urine.—This condition differs from the preceding in that it is a diminished production of the urine by the kidneys, instead of being a retention by the bladder. This is a very serious symptom, indicating inactivity of the kidneys from congestion, acute or chronic disease, or conditions present in such diseases as typhoid fever, cholera, and other diseases characterized by great debility. The

danger to be apprehended in this condition is the poisoning of the system from the retention of *urea*, the principal poisonous element eliminated from the blood by the kidneys.

Careful attention should be given to the amount of urine passed by patients or removed by means of the catheter. The amount usually passed in health is from a pint and a half to three pints. A much smaller quantity than twenty-four ounces or a pint and a half should be considered as a serious symptom.

Treatment.—If the attack is an acute one, relief may often be obtained by giving the patient a sweating bath of some sort, as a hot air or vapor bath, or a warm blanket pack. Fomentations across the small of the back applied continuously for an hour or two, or until relief is obtained, is also a very excellent measure. If fomentations are not successful, alternate cold and hot applications may be employed. In case the disease is chronic, the patient should be kept in a state of active perspiration for several hours so as to relieve the system of urea through the medium of the skin.

Painful Urination.—This is a symptom which accompanies many diseases of the bladder and urethra. It is due to an irritable condition of the mucous membrane of the urethra or bladder. It may often be much relieved by the daily use of the sitz bath or the ascending douche. In women, relief is frequently given by the prolonged vaginal douche.

Frequent Urination.—A frequent desire to pass water is generally due to an irritable condition of the bladder in consequence of chronic catarrh of this organ. It may also be due to sympathy with irritation in the rectum, uterus, or other organs. Enlargement of the prostate gland is one of the most common causes of this symptom in old men.

The difficulty can only be relieved by treatment of the disease upon which it depends. It is generally mitigated either by warm fomentations over the abdomen, prolonged sitz baths, or, in women, a vaginal douche. (See further under "Incontinence of Urine," "Acute and Chronic Cystitis," and "Irritability of the Bladder.")

Scanty Urination.—If the quantity of urine is much less than one and a half pints, or more than three pints, in twenty-four hours, there is occasion to suspect that some disease may be present.

This is a very frequent symptom in fevers. The urine when scanty is also very high colored and often contains a sediment. The amount

of urine is diminished when the skin is very active, as in the summer time in persons who perspire very freely. A sudden cold will not infrequently produce a scanty and high colored urine.

An excessive secretion of urine may be due to diabetes, or to chronic disease of the kidneys. It is also sometimes occasioned by less serious conditions, as by extreme nervousness, great mental anxiety, and various temporary conditions.

Color of the Urine.—The natural color of the urine varies from a light straw color to a yellow brown. The color is derived from the coloring matter of the blood. When urine is very abundant, its color is light; and when scanty, it is high colored.

In disease and various morbid conditions, the urine may become entirely colorless, or it may be deep red, green, blue, or olive color. In some cases, it even has a blackish hue. The deep red color is often present in fever. Olive color occurs in jaundice, and is due to the presence of bile in the urine.

When bile is present, the foam produced by shaking the urine in a bottle also has a deep yellow color. The presence of bile may be detected by placing a few drops of urine upon a piece of white porcelain or in a saucer, and adding a few drops of nitric acid. Rings of color will be seen spreading out from the point where the drop of acid was added. Various changes occur. The play of colors begins with green, and passes through olive, violet, blue, and red or yellow. The green color is characteristic of bile.

A dark brown or black color present in urine when passed, is due to blood in the urine. A black color appearing after the urine has set for some time is not particularly significant. Blue and green colors are very rarely seen. They are sometimes observed in cases of chronic inflammation of the kidneys. Peculiar coloration of urine is often induced by the use of medicines of various kinds. Black color is produced by carbolic acid and creosote. The urine is colored yellow by rhubarb and santonine. Senna gives to it a brown color, and turpentine, violet.

Odor of Urine.—The urine in health has a characteristic odor peculiar to itself. Peculiar odors are frequently produced by articles of food, as garlic. Turpentine, and other medicines also produce unnatural odors. The urine in dyspepsia often has a very offensive odor.

Diabetic urine has a smell resembling that of apples. When urine is retained long in the bladder, allowing decomposition to take place,

or when decomposition occurs in consequence of inflammation, the urine has a pungent odor, due to the formation of ammonia.

Taste of Urine.—In health the urine has a peculiar salty taste. A bitter taste indicates the presence of bile, and a sweetish taste, that of sugar. This test is seldom applied to the urine, but enthusiastic investigators of the diseases indicated by the urine, do not hesitate to resort to it. When either a bitter or sweet taste is observed, the chemical test for bile or sugar should be made.

Reaction of Urine.—By reaction is meant the condition of urine as to acidity or alkalinity. This is determined by test paper for the purpose. Alkaline urine turns red paper blue. Acid urine changes blue paper to red. In health, the urine is naturally slightly acid, especially in persons who employ a flesh diet. It is noticeable that animals whose diet is made up wholly of vegetables have alkaline urine, while in carnivorous animals, whose diet is made up almost wholly of flesh, the urine is very strongly acid.

Persons who eat much meat, have a very acid urine, while in those who subsist upon vegetables, the urine is only very faintly acid, is neutral, or distinctly alkaline. This fact should be remembered by persons who are subject to gout, rheumatism, neuralgia, and various nervous diseases, which are known to arise from a superabundance of acid in the blood, or, at least, are associated with a very acid state of the urine. Very acid urine is also likely to produce gravel or stone in the bladder, catarrh of the bladder, irritation of the urethra, and various other diseases of the urinary organs. Great acidity of the urine generally gives rise to a brick dust deposit when the urine is allowed to stand a short time. The fine, reddish particles composing this deposit are crystals of uric acid.

Great alkalinity of the urine sometimes occurs in consequence of decomposition taking place in the bladder. This occurs most frequently in chronic catarrh of the bladder, and in cases in which the bladder is not completely emptied as frequently as it should be. When this condition exists, the urine will have a very unpleasant and distinct ammoniacal odor, as though it had stood for a few hours in a warm room.

Acidity of the urine is relieved by the treatment to be presently recommended for uric acid. An excessive degree of alkalinity will be relieved by the proper treatment of the disease to which it is due.

Density of Urine.—By density is meant the specific gravity of

the urine, which is determined by an instrument for the purpose, called a urinometer. As the density of urine varies considerably during the twenty-four hours, being particularly great an hour or two after meals, the test should be applied to the whole amount of urine secreted in the twenty-four hours.

When this cannot be done, the first urine passed in the morning should be tested. The specific gravity of the urine in health is 1.015 to 1.025; when the urine is very abundant in quantity and of light color, its specific gravity is usually low; when scanty and high colored, the density is high. When the specific gravity is habitually as low as 1.006 to 1.012, and the quantity of urine secreted is not excessively large, it is probable that the patient is suffering with Bright's disease. In case the density is habitually 1.030 or more, and the quantity of urine is large, chronic diabetes may be suspected, and the urine should be examined for sugar. The specific gravity of the urine, of course, depends upon the amount of solid matter it contains. The more nearly it approaches to 1.000, the less excrementitious matter it contains. The approximate amount of solid matter in the urine can be ascertained by simply doubling the last two figures obtained in testing the specific gravity; for example, if the specific gravity is 1.025, the urine contains about fifty grains of solid matter in one thousand of urine.

Urinary Deposits.—Healthy urine is perfectly clear when it is first passed, although it may present, on standing for some time, a slightly clouded appearance. In various diseases, however, which are greater or lesser departures from health, the urine contains, after standing, a sediment which varies in color and character according to various circumstances which we will not now explain. On examination by means of various chemical tests and the microscope, this sediment is found to be composed, in the majority of cases, of one or more of the following substances: *Uric acid, urates, phosphates, oxalate of lime, blood, mucus, pus, or matter, epithelium,* and *casts.*

Each one of these we will notice briefly.

Uric Acid.—Fig. 324 and 325. A deposit resembling brick dust in color, or a fine, reddish sand, consists of uric acid. The test for uric acid is the following. Place a few crystals on a white plate; add a drop of strong nitric acid; heat over a lamp or candle until the fluid is all evaporated; then add a few drops of hartshorn, or aqua ammonia. A bright violet color appearing after the addition of ammonia indicates uric acid.

If the sediment is formed before the urine is passed, as is indicated by the presence of a deposit in the vessel immediately after the passage of the urine, the presence of gravel or stone in the bladder may be strongly suspected. A brick-dust deposit in the urine is probably chiefly due to inactivity of the liver, as it is the proper duty of this or-

Fig. 324. Crystals of Uric Acid. Fig. 325.

gan to convert uric acid into urea, a form in which it is soluble and never appears as a deposit.

Treatment.—A patient who has a brick-dust deposit in his urine should abstain from the use of a flesh diet, eating chiefly fruits and grains. Milk may be used in moderate quantities, and eggs and fish may be allowed occasionally; but the less the quantity of meat eaten, the better.

Such treatment should be taken as has already been recommended for torpid liver, which is probably a principal cause of this condition, in addition to the excessive use of meat.

Urates.—A deposit of urates in the urine produces a turbid appearance. The color varies with that of the urine; may be white, yellow, pink, or red. It is noticed only after the urine is cold, and may be distinguished by the fact that it disappears when the urine is re-heated. Urates are sometimes deposited in the bladder, especially in young children, and may be a cause of stone in the bladder. When this is the cause, the urine may be turbid when it is passed. The principal causes of this deposit are, feverish condition of the system, dyspepsia, great exhaustion from overwork, or dissipation. Taking cold is the most common of all causes of urinary deposits.

Treatment.—Avoidance of the causes is of course the first and most essential element of treatment. Beer, wine, tobacco, and all kinds of narcotics or stimulants should be wholly avoided. Little animal food should be used. The patient's diet should consist chiefly of fruits and grains, and he should practice the free drinking of water

taking one or two glasses before breakfast and an equal quantity before going to bed at night.

Phosphates.—Fig. 326. This is a white sediment which is found in alkaline urine. It is distinguished from urates by not being dissolved when the urine is heated. It is, however, dissolved by acids.

It is chiefly caused by smoking, by the use of alkaline medicines, excessive mental strain, nervous prostration, sexual excesses, especially self-abuse, and occasionally by excessive use of some articles of food, especially sweet fruits. When present in the urine when passed, it indicates decomposition of the urine in the bladder. This is one of the common causes of stone in the bladder. When present continuously, it generally indicates nervous disorder of some form.

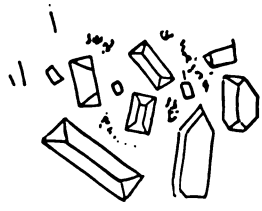


Fig. 326. Crystals of Triple Phosphates.

Treatment.—The treatment of this condition consists chiefly in the avoidance of the causes and removal of the diseased conditions upon which it depends.

Oxalate of Lime.—Fig. 327. This deposit is discovered only by means of the microscope. It is chiefly found in men, and generally occurs in patients suffering with indigestion, palpitation of the heart, irritable bladder, gloomy and irritable disposition, also often accompanies impotence. When very abundant, it may be the cause of a variety of stone in the bladder, known as mulberry calculus.

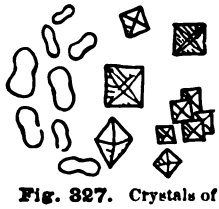


Fig. 327. Crystals of Oxalate of Lime.

Treatment.—The treatment consists in improved hygiene and cure of the disease upon which it depends. The patient should carefully avoid overeating, and the use of such articles of diet as are known to produce oxalates in the urine, such as rhubarb, raw apples, and most sweet fruits.

The use of hard water should also be avoided. Daily sponge baths, and the application of an inunction two or three times a week, together with the use of electricity, when possible, and massage, constitute the best treatment.

Pus in the Urine.—Fig. 328. The occurrence of pus in the urine is indicated by a deposit which closely resembles that of phosphates, but which does not dissolve when heated with acids, as does the lat-

ter deposit. It sometimes has a ropy or stringy appearance. It is due to decomposition in the bladder. It indicates the presence of inflammation or ulceration in the kidneys, bladder, or urinary passages. It is a very serious symptom, to which intelligent medical attention should be called at once.

Fig. 328. Pus Cells.

Bloody Urine, or Hematurea.—Blood in the urine, or hematurea, is indicated by a deep brown, reddish, smoky, or even black appearance. It may be produced by hemorrhage from the kidneys, bladder, or urinary passages. It often occurs in Bright's disease and catarrh of the bladder.

Casts and Epithelium.—Figs. 329 to 331. When present in great abundance, casts and epithelial cells form a white, flocculent deposit after the urine has been allowed to stand for some time. They cannot be distinguished, however, without the use of the microscope.

Fig. 329. Epithelial Casts.

Fig. 330. Granular Casts.

Fig. 331. Hyaline Casts.

Epithelium in great abundance indicates catarrh of the bladder. Casts of the small tubes of the kidneys indicate Bright's disease.

Chylous Urine.—A milky appearance of the urine sometimes occurs in consequence of the very abundant deposits of pus or phosphates It is also caused, in some cases, by the presence in the urine of chyle, which is supposed to be occasioned by the filaria, a parasitic worm which infests the blood-vessels and lymphatics, causing rupture of the latter into the urinary passages, an affection which is almost wholly confined to tropical countries.

CONGESTION OF THE KIDNEYS.

SYMPTOMS.—Urine very abundant, pale, or scanty and high-colored; if scanty, containing albumen, and often blood; examination with a microscope shows casts; denoting catarrh of the kidneys; no pain.

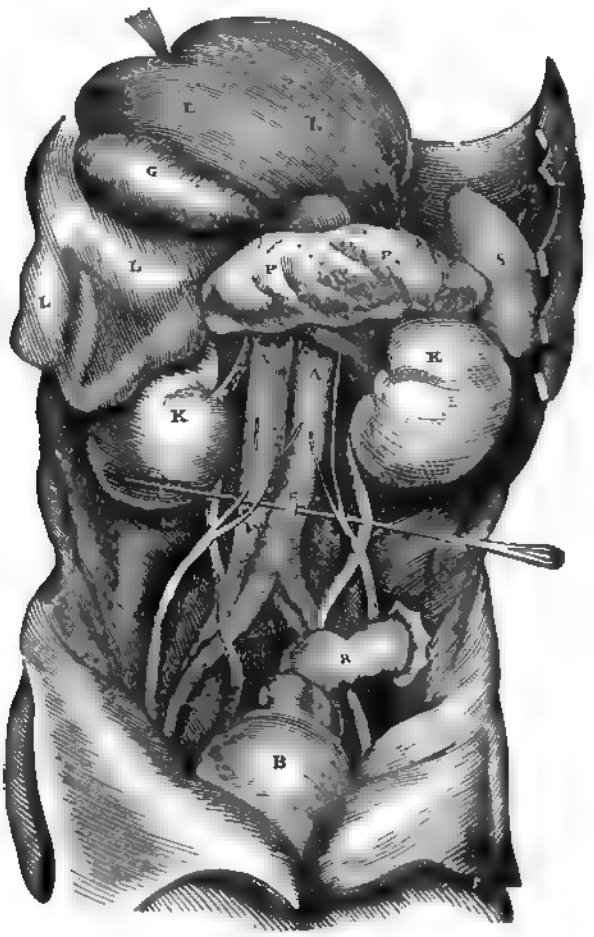


Fig. 332. Congested Kidneys.

Causes.—Due to either increased pressure in the arteries, as from hypertrophy of the heart, or to obstruction of the venous circulation. The first cause occasions an abundant secretion of urine; the second, scanty, high-colored urine. The disease is also caused by the various causes mentioned as productive of congestion of the liver, especially

by the free use of condiments, tobacco, tea and coffee, and alcoholic liquors, particularly raw whisky and beer. Lastly, as a common cause, may be mentioned the use of irritating diuretic remedies, and counter-irritation by means of blisters and irritating salves.

Treatment.—As a general rule, when the urine is scanty and high-colored, the abundant use of water as a drink should be prescribed. Two or three pints of water a day will be none too much for most patients. If the stomach is injured by this excess of cold fluid, the water may be taken quite hot, which will facilitate absorption. The wet-sheet pack, and vapor and hot-air baths, are indicated when the congestion is considerable, together with fomentations over the kidneys, the abdominal bandage worn constantly, and the application of electricity to the small of the back. The diet should consist chiefly of fruits and grains. The less animal food eaten, especially meat, the better. Coffee, tea, tobacco, condiments, and everything which will give the kidneys extra work must be most carefully avoided. The use of various powerful diuretics in these cases, a very common practice, is in the highest degree detrimental. The use of barley-water, slippery-elm water, linseed tea, and various other demulcent drinks, is perfectly harmless, but no more beneficial than the use of pure water.

HEMORRHAGE FROM THE KIDNEYS.

SYMPTOMS.—Bloody urine, which coagulates when heated; bleeding excited by exercise; clots in the urine.

This disease cannot always be positively distinguished from hemorrhage of the bladder and other parts of the urinary organs, unless symptoms of suppression of the urine occur, such as nausea, vomiting, convulsions, or dropsy, as sometimes happens in consequence of the blocking up of the tubes of the kidneys with clots. As a general rule, however, clots are more frequent and abundant in hemorrhage from the bladder than in hemorrhage from the kidneys.

Causes.—Hemorrhage from the kidneys may be the result of accident, gravel in the pelvis of the kidneys, congestion, or renal apoplexy.

Treatment.—Apply cold over the region of the kidneys by means of ice compresses, or cloths wrung out of cold water. The cold sitz bath, and injections of cold water into the bladder, are also useful measures of treatment. In severe cases it may be necessary to inject

a mild solution of tannin. The patient should be kept very quiet. Heat should be applied to the extremities. The patient should receive tonic treatment and a very nourishing diet after the hemorrhage has ceased.

ACUTE INFLAMMATION OF THE KIDNEYS—ACUTE BRIGHT'S DISEASE.

SYMPTOMS.—Chill, followed by fever and sharp pain in the region of the kidneys; sometimes violent vomiting; frequent urination; suppression of urine; urine opaque, bloody, or of a dark, or dirty brown color. Œdema, or dropsy, which changes from one part of the body to another, as from the face to the feet and ankles, or the reverse. Symptoms of suppression of urine, as convulsions, coma, etc.; examination with the microscope shows casts of the small tubes of the kidneys.

Causes.—This disease is a croupous inflammation of the kidneys, involving chiefly the small urinary tubes, which become blocked up, causing suppression of the secretion of urine. It occurs very frequently as a complication of scarlet fever, measles, diphtheria, typhus fever, and cholera. It may also occur in malarial fever.

When it occurs independently, it is commonly a result of exposure to cold, or the use of irritating diuretics or other irritating drugs, which affect principally the urinary organs, as balsam of copaiba, cantharides, and oil of turpentine.

There is every evidence to believe, also, that free indulgence in the use of alcohol, beer,—which is exceedingly stimulating to the kidneys, —and the excessive use of tobacco, are also causes of acute Bright's disease.

Treatment.—The essentials of treatment consist in fomentations to the small of the back; warm baths, followed by wrapping the patient in warm blankets, so as to continue the sweating; vapor baths, and hot-air baths.

These measures are, according to Niemeyer, much more effective, and much less likely to be attended by bad results, than the use of drugs to produce activity of the skin.

The Turkish and Russian baths, should, however, be avoided. The patient should practice drinking considerable quantities of water daily. Care should be taken that the water is pure and soft. When natural water answering these requirements cannot be obtained, well filtered water, or distilled water should be used.

Condiments, tea, coffee, tobacco, and all spirituous liquors, should be scrupulously avoided. Animal food should be used only to a very

limited extent. Meat may be better avoided altogether. Milk may be used moderately, and fish and eggs occasionally.

One of the most important of all hygienic requirements is careful attention to the maintenance of proper warmth of the body. The patient should take care to avoid overheating of his apartments, securing also a plentiful supply of fresh air. He should be extremely careful not to venture out of doors in cold damp weather, at least without being so thoroughly protected as to make chilling of the body or even coldness impossible. Warm woolen clothing should be worn next to the skin.

The use of medicines and mineral waters which excite excessive activity of the kidneys is regarded by experienced physicians as a pernicious practice. The kidneys need rest, instead of overwork, and rest should be given them by compelling the skin to do as large an amount of their work as necessary, to relieve them as much as possible. The use of opiates is also extremely objectionable, as it diminishes the activity of the kidneys, and hence increases the liability to poisoning from the retention of urea.

CHRONIC BRIGHT'S DISEASE.

SYMPTOMS.—Increasing debility; pallor; viscid urine; if the urine is shaken in a bottle, much froth, which lasts for a long time; urine coagulates with nitric acid, and when heated after adding acetic acid; whitish sediment containing casts; dropsical swelling of the face, feet, hands, and abdomen; bronchitis; watery diarrhea; pleurisy; peritonitis; œdema of the lungs; enlargement of the heart; valvular disease of the heart; frequently headache; when the disease is far advanced, nausea, vomiting, drowsiness, convulsions, coma; after attacks of coma, partial or complete blindness, due to rupture of a blood-vessel in the eye.

This disease is much more common than is generally supposed. It usually exists some time before its presence is known, as it is rarely accompanied by pain in the region of the kidneys, more often originating as a primary disease than following acute Bright's disease. The nature of the disease is such that the kidney gradually loses its ability to perform its duty. It is usually divided into three stages, in the first of which the organ is enlarged and pale of color. In the second stage, after degeneration has begun, it becomes yellow. The third stage is the stage of degeneration and atrophy in which the organ becomes almost useless as an excretory organ although it may continue to excrete large quantities of water.

Causes.—The principal causes thought to be productive of this dis-

case are exposure to cold and dampness, long-continued use of alcoholic liquors, and employment of irritating diuretics, as cubebs, copaiba, and excessive use of meat. It also frequently occurs in consequence of long-continued congestion, chronic gout, syphilis, scrofula, and malaria.

Treatment.—The same precautions respecting diet, clothing, etc., should be followed as prescribed for acute Bright's disease. Prof. Niemeyer and others have claimed excellent results from the use of an exclusive milk diet in this disease, without the use of medicines or any other remedy. The quantity taken is from two to three quarts daily. In many instances persons have greatly improved by this diet, dropsy and other symptoms being relieved in a remarkable degree. In one case, in which we used this remedy, the patient made very marked improvement, which has continued up to the present time, now nearly two years. Buttermilk has also been highly recommended as a diet remedy for this disease. The more closely the patient will confine himself to fruits and grains, the better it will be for him. Meat should be discarded altogether, and also coarse vegetables, such as asparagus, turnips, cabbage, and particularly beans and peas. Irish and sweet potatoes are, in fact, about the only vegetables which can be eaten without detriment.

All possible measures should be employed to build up the patient's health, such as gentle exercise in the open air, sun baths, and tonic applications of electricity. It is also well for him to wear a moist abdominal bandage to encourage the activity of the liver, as well as kidneys. He should drink daily a considerable quantity of water, and care should be taken to keep the skin in as active a condition as possible. The best means for this purpose are the wet-sheet pack, hot-air bath, vapor bath, and inunction with vaseline, sweet oil or cocoanut oil, two or three times a week.

When the dropsical accumulation becomes very great, the hot-air bath should be used daily. In extreme cases, the sweating should be prolonged after the bath by wrapping the patient with warm woolen blankets, surrounding him with hot bags and bottles of hot water, and giving him warm drinks in abundance. In case vapor or hot-air baths cannot be conveniently employed, active sweating may be produced by covering the patient warmly in bed, and surrounding him with bottles of hot water, over each of which has been drawn a stocking wrung out of warm water. This is an excellent means of producing

vigorous sweating. It is known as Sir James Simpson's bath, having been first suggested by that eminent physician. When the patient has severe vomiting, give lemon juice in small sips, ice cold or hot water, or allow him to swallow small bits of ice. Hot fomentations or a mustard plaster over the stomach will sometimes give relief. Applications of ice to the head, and alternate hot and cold rubbing of the spine by means of a sponge dipped in hot water and a small piece of ice, constitute the best means of combating the drowsiness and tendency to coma and convulsions.

Great swelling of the limbs sometimes requires puncturing of the skin, to allow the effused fluid to escape, as the circulation may be interfered with so much that it cannot be relieved by sweating.

ABSCESS OF THE KIDNEYS.

SYMPTOMS.—Begins with chill, followed by fever; violent pain in the region of the kidneys, and increased by pressure, extending along the urethra to the bladder, and down the thigh; vomiting; urine scanty, high-colored, contains pus and blood; symptoms of suppression of the urine; when chronic, continued fever, and continued chills; gradual emaciation and increasing debility.

This is a somewhat obscure disease, and cannot, in many cases, be distinctly distinguished from some other affections of the kidney and its region. After existing for some time, a lump can usually be felt near the kidney. In a case which we now have under treatment, a tumor may be felt beneath the lower ribs, on the left side, as large as two fists. Recovery from this disease is very rare, the patient usually dying from gradual exhaustion.

Causes. Gravel; obstruction of the passage of the urine; extension of inflammation from the bladder; embolism, occurring in heart disease. In many cases the cause cannot be ascertained.

Treatment.—Fomentations over the region of the kidneys and the seat of pain, with cold applied during intervals when there is much local inflammation and general fever. Hot baths to induce perspiration, and copious water-drinking to wash away the products of inflammation from the bladder and urinary passages.

A vegetable and fruit diet. In severe cases, the exclusive milk diet may be tried. Washing out the bladder should be practiced daily, when there is much local irritation. For the relief of the fever, which is, in some cases, quite high, sponge baths should be frequently applied. In [illegible] cases, in which the skin is dry and inactive, inunction should [illegible]ved two or three times a week.

ABSCESS NEAR THE KIDNEY.

SYMPTOMS.—Symptoms similar to those of the preceding disease, only the urine is not affected; great pain; tumor felt at the bach, just below the lower ribs; in some cases sudden death.

In these cases, the abscess forms in the mass of fat in which the kidney is embedded, instead of in the organ itself. The abscess may discharge internally or externally. When it discharges internally, it sometimes opens into the intestines and sometimes into the abdominal cavity. In the latter case, the result is speedy death. When it opens externally, or into the intestinal canal, there is a fair chance of recovery.

Treatment.—When a tumor can be felt over the region of the kidney, at the back, which gives evidence of containing pus, it should be promptly opened, to prevent its discharging internally. Fomentations should be applied to the affected part, both before and after opening the abscess.

FATTY DEGENERATION OF THE KIDNEYS.

SYMPTOMS.—Debility, gradually increasing; great pallor of face and skin, often accompanied by puffiness; frequent pulse; frequent urination; dyspepsia, with attacks of nausea and vomiting; tendency to inflammation of the heart-case, pleura, peritoneum, and the membranes of the brain, and also to inflammation of the retina, causing blindness; general dropsy; symptoms of uremic poison and convulsions; coma, drowsiness, and frequently headache; albumen in the urine, as shown by coagulation after adding nitric acid, and heating; cloudy sediment in the urine, consisting of casts.

Causes.—This disease is sometimes the result of acute inflammation of the kidneys. It most often occurs, however, in consequence of dissipated habits, the use of liquors, and severe and prolonged exposure to wet and cold. It may also result from excessive use of fats, gluttony, and sedentary habits. After death, the kidney is found to be very large, pale, and soft.

Treatment.—The patient must abstain from the use of butter, lard, fat meats, all kinds of fat foods, salt, sugar, and all sweet and starchy substances. The use of meat should be very limited indeed. Alcoholic liquors, tea, coffee, and tobacco must be wholly interdicted. Fish may be allowed occasionally; eggs and milk may be used in moderation. The treatment is usually simply palliative, as complete recovery can hardly be expected when the kidney has become structurally diseased.

For relief of the dropsical symptoms, vapor baths, packs, a bandage about the abdomen, the application of electricity to the abdominal walls,

and other measures recommended for a similar condition in other diseases, should be thoroughly employed. When the limbs are become very greatly swollen, the skin may be punctured, in many cases, with a needle, so as to allow the fluid to drain out. No harm will result from this measure, if the portion of the limb in which the punctures are made is covered with a cloth bandage which has been wet in a solution of ten drops of carbolic acid or five drops of oil of cinnamon, with a teaspoonful of glycerine, to an ounce of water. The solution should be well shaken before being applied. After the limbs have been relieved of their fluid, a return of the swelling can be prevented to a considerable degree, by the use of an elastic rubber bandage, which should be applied evenly to the limbs, beginning at the toes and extending upward to above the knees.

WAXY DEGENERATION OF THE KIDNEYS.

SYMPTOMS.—Gradually increasing loss of strength; lassitude; great thirst; unusual quantity of urine; albumen in the urine; cloudy sediment, which is composed of tube casts; urine very dark colored and yellowish brown; enlargement of the liver and spleen; dropsy of the abdomen, or general dropsy; sometimes watery diarrhea; symptoms of uremic poisoning,

This disease is very similar in its course to the preceding. It occurs most often in persons who have long suffered from syphilis, consumption, or a prolonged discharge, as from chronic abscess or bone disease, which may be considered as the chief cause of this affection. On examination after death the kidney is found to be enlarged, hard, and heavy. When cut, it has a waxy appearance, from which the disease has derived its name.

Treatment.—The treatment is the same as for fatty degeneration.

CANCER AND CONSUMPTION OF THE KIDNEY.

These are rare diseases, and generally occur in connection with the same diseases of other parts. No special treatment is indicated, in consequence of the incurable character of these maladies.

FLOATING KIDNEY.

SYMPTOMS.—Movable tumor of the size and shape of the kidney, usually felt below the ribs on the right side.

This disease, although not very frequent, is occasionally met with, especially in large hospitals. We happen to have at the present time a

patient under treatment, who is afflicted with this difficulty on both sides, although it almost invariably occurs on the right side only. It is chiefly caused by frequent child-bearing, or by severe jarring, as from a fall. It is most common in women. As no particular harm arises from the movable condition of the kidney, the organ performing its functions as well as when it remains stationary in its proper place, no special treatment is required; in fact, there is no remedy of very great value for this peculiar affection. The wearing of the abdominal bandage is to be recommended, however, as it sometimes relieves the patient of the slight discomfort which is occasionally felt.

ADDISON'S DISEASE—BRONZE SKIN.

SYMPTOMS.—Gradual darkening of the skin to bronze colar, sometimes green or black; most intense on exposed parts; the roots of the nails and whites of the eyes remain uncolored; black spots on lips and mouth; great and increasing debility, and great depression; pain in the back and at the pit of the stomach; dyspepsia and vomiting; diarrhea; convulsions; rapid pulse, but no fever.

This is a very peculiar disease, and is named after the man who first described it. The symptoms which characterize the disease are supposed to be due to chronic inflammation and degeneration of the supra-renal capsules. The cause of the disease is not known.

Treatment.—The only treatment which is of any value whatever is the employment of such measures as will improve the patient's general nutrition and enable him to tolerate the disease as long as possible, recovery rarely, if ever, taking place.

PYELITIS—INFLAMMATION OF THE PELVIS OF THE KIDNEYS.

SYMPTOMS.—Chills; fever; pain in region of the kidney, with tenderness; vomiting; frequent and painful desire to pass urine; excessive quantity of urine, which always contains pus and blood; urine cloudy when passed; pain increased by jolting of the body.

This disease cannot always be detected during life. It is often very obscure. Sometimes death occurs by perforation of the pelvis, the threatening of which is indicated by sharp pain in the back, pain in drawing up the limbs, and repeated chills.

Causes.—The most common cause is gravel. Other causes are the use of irritating diuretics, such as cubebs, copaiba, turpentine. It may also arise from extension of inflammation of the bladder or urethra to the kidney.

Treatment.—Apply cold compresses over the small of the back continuously, changing for fomentations, for fifteen minutes at a time, once in two or three hours. Fomentations may be applied longer if necessary to relieve the pain. When there is much pain, the prolonged warm full bath is the best remedy that can be employed. If comfortable, the patient may remain in the bath two or three hours at a time, without detriment. Dr. Oppolzer, a very eminent physician, recommends the use, in this disease, of milk and alum-water, as the principal diet.

GRAVEL IN THE KIDNEY—RENAL COLIC.

SYMPTOMS.—Small concretions and brick dust sediment passed in the urine; a sharp pain in the kidney, coming on after severe jolting, and acute pain darting from the kidney to the bladder and down the thigh; great desire to pass urine, efforts ineffectual; vomiting; sudden cessation of pain after having lasted from two to thirty minutes, or longer.

This disease occurs most often in adults, but not infrequently in children. It is an exceedingly painful affection, and may easily be mistaken for ordinary colic or the passage of gall-stones. The causes are the same as those which produce stone in the bladder. They are not fully understood at present.

Treatment.—Hot baths, fomentations over the kidney and following the course of the pain, and large draughts of hot water, are the most useful measures of treatment. We will also suggest the use of copious hot enemas. This measure is often very efficacious in relieving severe abdominal pain, for which we have often employed it, though we have not had the opportunity of using it in this disease; but we have no doubt that it will be found a very useful means of relieving the terrible pain of gravel if efficiently employed.

PARASITES OF THE KIDNEYS.

The kidney is subject to parasitic affections as well as other parts, although less liable to be thus affected than the liver. The most common parasite of the kidney is the echinococcus. It is the undeveloped embryo of the tapeworm. The sac in which the parasite is contained frequently attains the size of a child's head. Another parasite of the kidney is the *strongylus gigas*, a worm which somewhat resembles the round worm found in the intestines. It grows from six inches to three feet long.

The symptoms of parasites in the kidneys and their causes are both very obscure.

CATARRH OF THE BLADDER—CYSTITIS.

SYMPTOMS.—ACUTE : ***Chilliness; pain and tenderness in the region of the bladder, extending to the perinæum, and down the limbs; burning pain in the urethra; frequent scanty urination; either slight or high fever, or none at all; nausea; urine clouded with pus, stringy mucus and blood; clammy sweats.***

CHRONIC : ***Symptoms sometimes slight. Walls of bladder tender; frequent urination; scanty urine, containing pus, and sometimes blood and viscid, ropy mucus; thickening of the walls of the bladder; ulceration, dribbling of urine, dilatation or contraction of the bladder; loss of appetite; derangement of the digestion; debility.***

This is a disease which, while not fatal, often renders a person subject to it very wretched for many years. When long continued, the mucous membrane of the bladder becomes roughened, fissured, often ulcerated, and in some cases almost entirely destroyed.

Causes.—Long retention of urine; decomposition of urine in the bladder when retained by temporary paralysis; use of cantharides, balsam of copaiba, and other irritating drugs; stricture of the urethra; enlargement of the prostate gland; irritation from stone and gravel; careless use of the catheter; especially use of a dirty catheter, causing decomposition of urine; exposure to cold; gonorrheal inflammation of the urethra, extending to the bladder; in females, inflammation of the womb.

Treatment.—Acute catarrh of the bladder generally recovers of itself in a short time, the patient having good care and proper nursing, and avoiding the causes by which the disease was produced. When it occurs in consequence of exposure to cold, the best remedy is thorough sweating by means of warm packs, or the full bath followed by dry packs. Thorough fomentations to the bowels and the use of large warm enemas in men, and prolonged hot vaginal douches in women, are also very essential measures of treatment. The patient should drink large quantities of water, and should abstain from the use of salt, spices, condiments, and should eat little meat. The latter suggestions also apply to chronic catarrh of the bladder.

Fomentations and frequent warm baths to induce vigorous action of the skin are also useful in chronic cystitis. When there is much pus and blood, it is generally necessary to wash out the bladder thoroughly with tepid water, bran tea, or slippery-elm water, or a solution of golden seal, or some other mild astringent. When the bladder is dilated, the urine should be drawn with a good catheter two or three times a day, and the bladder should be well washed out with a weak solution of

carbolic acid. Four or five drops of carbolic acid to the ounce of water or bran tea is about the right proportion. In case of dilatation of the bladder, the patient should learn to use the catheter himself, so that in case the services of a physician cannot readily be secured, he may not be left to suffer. When the bladder is contracted, the patient should retain the urine as long as possible, so as to dilate the contracted walls of the organ. In order to effect a cure, it is often also necessary to stretch the walls of the bladder by means of daily injections with a syphon syringe.

HEMORRHAGE OF THE BLADDER.

SYMPTOMS.—Bloody urine; many clots of considerable size.

Hemorrhage from the bladder is sometimes difficult to distinguish from hemorrhage from the kidneys. When it occurs at intervals, it may generally be distinguished, however, by the presence of pus and mucus in the urine during the intervals, which indicates chronic catarrh of the bladder, and also by the greater abundance of clots.

Causes.—Hemorrhage of the bladder may arise from ulceration of the bladder, from injury, or from the irritation of stone in the bladder. It also frequently occurs in cases of acute or chronic cystitis, and sometimes from vascular tumors which grow from the diseased mucous membrane of the organ.

Treatment.—The patient should be kept quiet in bed. Apply cold over the bladder, and hot to the extremities. In severe cases, it may be an advantage to tie a bandage tightly around one or both limbs, so as to retain a portion of the blood in the limbs, and thus encourage spontaneous checking of the hemorrhage.

The ligation of the limbs should not be continued too long, and they should be carefully watched. If they become purple or very cold, the bandage should be removed. In very bad cases, not otherwise controlled, cold water or a weak solution of alum should be injected into the bladder.

INCONTINENCE OF URINE—ENURESIS.

This affection is often a troublesome one, unfitting the patients for their accustomed avocations, on account of the necessity of relieving the bladder so frequently, in some cases every fifteen or twenty minutes. We have had patients who declared that they had to get up as often as twenty times during the night to relieve the bladder. There are two forms

of this disease. In the variety just described, the loss of power to retain the urine more than a short time is due to the sensitiveness in the bladder, which, in some cases, is the result of chronic inflammation; in others, of chronic inflammation, or enlargement, of the prostate gland. Another variety of the disease is that which gives rise to wetting the bed at night, which seems to be due to the opposite condition of the bladder, or diminished sensibility, so that the urine passes away without waking the patient. This form is most common in young children, rarely continuing after the age of twenty years.

Causes.—Some of the causes of the first form of the disease have just been mentioned. Constant dribbling of urine also sometimes results from dilatation of the bladder and partial paralysis of its walls. The patient passes water frequently through the day, and never empties the bladder fully, so that it continues to overflow. The nocturnal incontinence of urine arises from causes not fully understood. It is not generally, as many people suppose, a simple habit. It is sometimes occasioned by sleeping on the back.

Treatment.—For the first form of the disease, cold sitz baths, douches over the bladder, and daily washings by injections of tepid water, are the proper remedies. If the urine is strongly acid, the patient should abstain from the use of meat. For "wetting the bed at night," a great variety of remedies have been tried, most of which are of no value whatever. The most effective plan which can be pursued, is to restrain the patient from drinking for three or four hours before retiring. An eminent physician has also suggested that the use of meat by children encourages the habit. Whipping, scolding, and frightening children, unless there is good evidence that the child is lazy or vicious, will do no good; in fact, these measures are likely to do harm by exciting a nervous condition of the system which will encourage the very thing which is to be corrected. Wearing a wet bandage about the lower part of the bowels at night is a very useful measure. To prevent the patient from sleeping upon the back, a good remedy is to tie a knot in a towel and place it about the body in such a way that the knot will come at the center of the back. In cases in which the patient is old enough, and sufficiently intelligent to appreciate moral influence, he should be encouraged, and should be given some simple prescription in which he should be taught to have perfect confidence as a certain cure, since faith will do much toward effecting a cure when other remedies are of no avail.

SPASM OF THE BLADDER.

SYMPTOMS.—Incontinence; retention of urine; desire to pass urine, but inability to do so; violent pain, with intervals of complete relief; spasm in the rectum; in some cases, general convulsions.

Causes.—This disease is often a very troublesome one. It may arise from disease of the brain and nervous system, or, as is generally the case, it may be the reflex result of irritation of the womb or of the rectum, as from piles or fissure. It also occurs very frequently in hysterical and nervous women from pure nervousness.

Treatment.—Removal of the cause, if possible, by cure of the disease upon which the difficulty depends. The best palliative measures are warm baths, hot enemas in men, and prolonged vaginal douches in females. Passing the catheter will often relieve the spasm at once.

PARALYSIS OF THE BLADDER.

SYMPTOMS.—Retention of urine; when bladder is greatly distended, dribbling; urine bad smelling and loaded with mucus; often severe pain at neck of bladder.

Causes.—The most frequent causes are general paralysis; paralysis of the lower part of the body; over-distention of the organ from stricture, or other obstruction to urination; sexual excesses.

Treatment.—When the paralysis is complete, the bladder must be relieved by means of the catheter two or three times a day. The best curative remedies are cool sitz baths, cool compresses over the bowels, cool enemas in males, and tepid, gradually cooled douches in females; daily injection of the bladder with warm water gradually cooled down to 65° or 70°; application of electricity to the bladder, both through the abdominal walls and by means of the metallic sound, two or three times a week.

IRRITABILITY OF THE BLADDER.

SYMPTOMS.—Straining after urination, with desire to pass water when the bladder is empty; frequent urination; dribbling urine; smarting in urination; pain in back and at the fork of the thighs in males; relief of the symptoms at night.

This is a very common difficulty. It frequently exists in consequence of slight catarrh of the bladder which has not been discovered, and continues after recovery from chronic catarrh of the bladder.

Causes.—The chief causes are neglect to relieve the bladder; acidity of urine from the excessive use of meat, use of alcoholic liquors and

tobacco; self-abuse; prolonged sexual excitement from lewd thoughts; excessive sexual indulgence.

Treatment.—Avoidance of the causes; a nutritious diet of fruits and grains, and total abstinence from tea, coffee, tobacco, and alcoholic liquors, and the use of meat in very small quantities. Fried food, butter, ginger, mustard, pepper-sauce, and all other irritating condiments should be wholly discarded. As the patient suffering from this disease is often very gloomy and despondent, he should be supplied with cheerful surroundings. By way of treatment, the cold bath, the use of fomentations to the lower part of the spine, and the application of a belladonna plaster in very severe cases, is to be recommended. The patient should also carefully avoid straining after passing urine. Passage of the sound is also useful. We have employed, with excellent success in some cases, a double sound, so arranged as to allow the circulation of a current of water through it while in use. We regard this as a very excellent measure of treatment.

GRAVEL.

SYMPTOMS.—Irritation of the bladder; white or red sediment passed with the urine.

Causes.—A red sediment occurs in persons whose urine is very acid. It is most frequent in persons suffering with gout and rheumatism, and often arises from the excessive use of meat. White deposit, generally composed of phosphates, is most common in persons suffering with chronic dyspepsia, neuralgia, and various nervous disorders; also, is often produced by overstudy, loss of sleep, overwork, dissipation, etc., etc.

Unnecessary alarm is frequently excited by the discovery of whitish sediment in the urine, especially in persons who have been addicted to self-abuse, which is also a common cause of this affection, it being mistaken by these persons for seminal fluid. A microscopic examination is necessary in these cases to determine whether the patient's fears are groundless or not.

Treatment.—The treatment consists in the avoidance of flesh diet, alcoholic liquors, tea, coffee, and tobacco; an abundant use of fruit and grains when the person is suffering with the red, or uric acid gravel. Fomentations over the liver, and the wet girdle worn about the body at night, together with a wet-sheet pack, or hot air or vapor bath, once or twice a week are excellent measures of treatment. If there is much irritability of the bladder, a cool sitz bath should be taken daily. For white deposit, the best remedies are such tonic measures as will improve

the patient's condition. Special attention should be given to improving the digestion. Abundant out-of-door exercise, sun baths, and frequent inunctions, are among the chief remedies indicated in this difficulty.

STONE IN THE BLADDER.

The causes of this affection are similar to those of the preceding.

Gravel probably originate in the kidneys, and finding their way to the bladder through the ureter, there become gradually enlarged until calculi are formed. More can be done for the relief of stone in the bladder by regulating the diet than by the use of any of the so-called "solvents" for calculi, which are of little, if any, value. Large calculi generally require a surgical operation for their removal. The cutting operation so long practiced is now being, in a considerable degree, superseded by the new operation of crushing, which can be performed by a skillful surgeon much more rapidly and safely than the old operation of lithotomy.

TUMORS OF THE BLADDER.

Tumors of various sorts, principally vascular or villous in character, occasionally form in the bladder, in consequence of long-continued catarrh of its mucous membrane; warty excresences are also formed in profusion over the surface of the bladder. Cancer occasionally affects this organ as well as nearly every other in the body.

The treatment of these affections also pertains to the domain of surgery, and need not be considered further here, especially as they are very rare; and no treatment can be applied to them on account of the difficulty in reaching the seat of the disease.

DISEASES OF THE LOCOMOTIVE ORGANS.

ACUTE RHEUMATISM.

SYMPTOMS.—Slight chilliness for two or three days, followed by fever, or fever from the first; pain in one or more joints, most frequently in the knee, ankle, wrist, or shoulder, which increases rapidly and becomes very severe; great tenderness of the affected joints; pain greatly increased by motion; joint swollen; pulse ninety to one hundred a minute, sometimes more rapid; frequent respiration; sour saliva and perspiration; considerable thirst; scanty and high-colored urine, usually with reddish sediment; tongue coated.

Acute rheumatism is a very common disease. It is rarely immediately fatal, but very often leaves the patient with difficulties which, sooner or later, terminate his life. This occurs whenever the heart becomes affected by the disease, which not infrequently happens. This does not occur by a metastasis or change of the seat of the malady from the joints to the heart, as is often supposed, but by an extension of the disease to the lining membrane of the heart. In consequence of inflammation, the valves of the heart become thickened and contracted so that valvular organic disease of the heart is the result. Rheumatism is the most common cause of this form of heart disease. The extension of the disease to the heart is indicated by the occurrence of acute pain in the left side, in the region of the nipple, disturbance of the pulse, increase of fever, and increased frequency of respiration, in fact, all the symptoms elsewhere described as occurring in endocarditis. Only one, or all the joints in the body, may participate in the inflammation. The joints are generally affected symmetrically; that is, the ankles, wrists, knees, elbows, or shoulders, will be affected on both sides at the same time. When this is not the case, analogous joints upon the same side, are likely to be affected, as the ankle and wrist, the knee and elbow, the hip and shoulder, etc. Sometimes the disease appears to be very fickle, changing constantly from one joint to another without any apparent cause, the change taking place within a few hours.

By a careful investigation of the subject nearly twenty years ago, our instructor in the practice of medicine and physical diagnosis, Dr. Austin Flint, of Bellevue hospital, New York, showed that rheumatism is a self-limited disease; that is, one which will recover of itself, without

any treatment whatever, and in from two to eight weeks, the average duration of the disease being about four weeks. Dr. Henry Sutton, of Guy's hospital, England, in his investigations found the average duration, in forty-one cases, two weeks. In two subsequent series of cases, the duration was nine to ten days.

Causes.—The causes of rheumatism are not thoroughly understood, but it is generally believed that exposure to cold and wet are the most common exciting causes, while free living, especially the large use of meat, and sedentary habits,—conditions which favor the production of an acid condition of the blood, particularly the accumulation of uric acid,—have much to do with producing a predisposition to this malady. Dr. Murchison holds that inactivity of the liver is a predisposing cause of rheumatism. A tendency to the disease is undoubtedly inherited in many cases. Rheumatism seems to be very closely allied to gout, a disease from which it cannot always be distinguished. Indeed, some very eminent observers, among whom may be classed the learned Dr. Fothergill, of England, hold that rheumatism and gout are one and the same disease.

Treatment.—The preventive treatment of rheumatism consists in thoroughly clothing the body, wearing flannel next to the skin, protection from exposure to cold and damp, especially sudden checking of the perspiration, and avoidance of too free use of animal food of all kinds. The excessive use of salt, and of the various condiments, together with the use of alcoholic liquors and tobacco, produce an undoubted tendency to this disease. As soon as possible after the attack begins, the patient should be placed in a hot blanket pack, in which he should be kept for several hours. As a general rule, the longer the pack is continued, the better the effect. The pack should be continued two to four hours at least, and may be repeated two or three times within the twenty-four hours with advantage. In the Mt. Sinai hospital, of New York, this plan of treatment has been adopted almost to the exclusion of other methods, and with marked benefit. In some cases, the patients were left in the pack all night. We have employed this plan of treating rheumatism for a number of years with most excellent success, patients having all made good recoveries without complications. Hot air, vapor, Turkish and Russian baths are also valuable, as well as the hot pack, but less serviceable on account of the pain occasioned by moving the patient in the administration of the bath. Hot fomentations applied over the affected joints give great relief.

The joints should be kept constantly enveloped in warm applications. Moist heat may sometimes be exchanged for dry heat, in the form of bags filled with salt, sand, or corn-meal, or some similar substance, as hot as can be borne. Hot-water bags constitute the best method of applying dry heat in these cases. The patient should be allowed an abundance of drink. Lemonade, with a very little sugar, is one of the best drinks, as the juice of the lemon seems to have some influence upon the disease, in some cases. The sour perspiration should be frequently removed from the skin by rubbing with dry flannels. Warm sponge baths often add to the patient's comfort. An eminent French physician has recommended the application of cold water to the sound part of the body, the water being injected into the tissues near the joint corresponding to the affected joint, by means of the hypodermic syringe. He claims to have obtained almost marvelous results from this mode of treatment. (See page 1066). When the fever rises very high, it is, in some cases, necessary to administer a prolonged cool bath. The patient should be put into a bath about the temperature of the body, the temperature of the water being gradually lowered to seventy-five or seventy degrees. The bath should not be prolonged sufficiently to produce marked chilliness on the part of the patient. We have never resorted to this measure, though it is highly recommended by some eminent authors. It is a somewhat severe one, and is attended by slight danger of occasioning rheumatism of the heart, and when employed should be used with very great care on this account. The employment of tepid sponge baths, repeated every hour or two, or more frequently, if necessary, is a safer means in these cases. When hot fomentations seem to increase the pain in the joints, cool or cold applications may be employed.

The diet of the patient during the attack should consist wholly of simple preparations of fruits and grains. Meat, beef-tea, and all other animal food, excepting milk, should be wholly avoided. The use of meat after convalescence is begun, is a frequent cause of relapse, hence flesh should not be eaten for some weeks after recovery.

If symptoms of inflammation of the heart arise, the patient should be kept upon a very low diet, or should take little or no food for a day or two. Hot fomentations and poultices should be constantly applied to the chest, covering the whole left side. The patient should have an abundance of fresh air, but should not be exposed to drafts.

The number and variety of drugs which have been employed for

rheumatism are almost endless. Scarcely a month passes which does not bring to light some new remedy, which is pronounced to be a panacea for this disease. The unreliable character of these remedies is shown, however, by their great number and variety, which is sufficient evidence that they do not accomplish what is claimed for them.

Prof. Niemeyer expresses very little confidence in medication of any sort as a means of shortening the duration of this disease, and the investigations of Dr. Flint and Dr. Sutton, already referred to, show that good nursing, without any medication whatever, secures as speedy recovery as the use of any known remedies. If any remedy at all is to be taken, ordinary baking-powder, taken in doses of half a thimble-full, dissolved in water, once in three or four hours, answers as good a purpose as anything which can be used. It is well to allow the patient to take lemon juice or eat lemons as freely as he desires. Several may be eaten every day with advantage. Salicylic acid, which has been recently recommended for rheumatism, does not sustain the reputation given to it, and sometimes serious symptoms have been produced by its free use. In severe cases of rheumatism, a physician should be called when one can be obtained.

Sub-acute Rheumatism is a form of the disease in which the symptoms are less acute, but continue a longer time, the patient being subject to frequent relapses. It often follows the acute form of the disease. The treatment is essentially the same as that described for acute rheumatism.

CHRONIC RHEUMATISM.

SYMPTOMS.—Pain in the joints; slight tenderness on pressure; more or less swelling of the joints; either one or several joints may be affected; slight fever or none at all; pain increased at night, and by bad weather.

Chronic rheumatism, sometimes the acute form of the disease, generally runs an independent course, beginning insidiously. It generally produces more or less deformity, when long continued, from stiffness of the joints. In many cases the patient suffers with flatulent dyspepsia, and other forms of indigestion. The disease is very chronic in character, often continuing many years, frequently without affecting the general health as much as would be expected.

Treatment.—Pain and stiffness of the joints is best relieved by hot-water bags, hot fomentations, and friction. The prolonged hot spray and hot pour we have also used to very great advantage. In his article

on this disease, Prof. Niemeyer remarks that the douche applied to the affected part is a much more effective derivative than the hot iron, which is often recommended, together with plasters and other irritants. When the pain in the joint is very severe, and the inflammation great, some physicians recommend the employment of a freezing mixture of snow or pounded ice and salt. The joint should be protected by thin muslin, and surrounded by the mixture. The application should not be continued more than five minutes, but may be repeated. It should not be employed more than twice a day. It almost always gives immediate relief.

The various liniments which have been recommended are generally effective only by means of the rubbing by which they are applied. This view we have often confirmed by our own experience. The pains at night are generally relieved by wrapping the affected joints in moist flannels, which are covered with dry cloths, or oiled silk. We have often recommended patients, in whom the disease was chiefly confined to the hands, to wear upon the hands at night large cloth mittens, filled with oatmeal or corn-meal mush and tied about the wrist. We have often seen excellent results from this simple plan of treatment. It acts upon the same principle as the warm packing of the joints, a remedy which has in our hands proved more effective than any other in relieving the pain and tenderness, and removing stiffness. The general condition of the system, on which the disease of the joints depends, will be best relieved by the employment of the wet-sheet pack, the vapor, hot air, Turkish or Russian baths, and other eliminative measures. Some one of these modes of treatment may be employed daily to advantage, when the patient is strong enough to bear severe treatment, and in some cases will need to be continued for months. We have frequently been taught the importance of persevering, even in apparently hopeless cases, by seeing patients recover under this treatment, after the employment of a great variety of remedies for years without any apparent benefit, indeed, without even checking the progress of the disease. The great reputation enjoyed by some mineral springs in the treatment of rheumatism, particularly by the hot springs of Arkansas, and other thermal springs, is due to the active elimination which is induced by the hot baths. We have, however, successfully treated cases which have remained under treatment at these celebrated resorts for months without benefit, and had almost totally despaired of recovery.

We have found, in some cases, great advantage from the use of local

applications of electricity to the affected joints while the patient was in a warm bath, as in a Turkish, hot-air, or vapor bath ; and a combination of electricity, particularly of faradic electricity, with the warm water bath, is also a very effective means of relieving pain in the joints. The application of a strong galvanic current to the affected joints, daily, or every other day, has proved very successful in some cases. We consider inunction a very important adjunct to the treatment, especially in cold weather, as it in some degree protects the patient from the results of exposure to alternations of temperature. Such exposure should be avoided, however, as much as possible, as it is very important that the temperature to which the body is subjected should be kept as uniform as possible. The body should be clothed in flannel, and the affected joints should be protected with extra covering. The tendency to stiffness of the joints should be counteracted by daily manipulations to as great an extent as possible without exciting too great increase of pain. The patient should resist as much as possible the tendency to bend up the limbs and joints which are affected. In case the knee joints are affected, the tendency to stiffening in a flexed condition may be prevented by elevating the foot when sitting.

The diet of the patient should be nutritious, but as free as possible from meat and all highly nitrogenous food. Tea, coffee, tobacco, and alcoholic liquors and stimulating condiments should be carefully avoided. Salt should be used as little as possible. Some authors warn patients against the use of raw fruits, particularly apples, pie-plant and asparagus. As a general rule, the coarse vegetables should be avoided. A patient suffering with flatulent dyspepsia, or other forms of indigestion, should follow the rules which have been laid down elsewhere.

DEFORMING RHEUMATISM, OR RHEUMATIC GOUT.

SYMPTOMS.—Pain in joints, usually slight, sometimes severe; pain increased by pressure and by motion of the joint; motion of the joint accompanied by slight crackling; deformity of joints; fingers drawn toward the little finger side of the hand.

This disease in some respects resembles rheumatism, while in others it is more like gout. It is not accompanied by the fever and inflammation usually present in rheumatism. It differs from gout in that it affects the large as well as the smaller joints.

Gout is generally confined to the fingers and toes. Rheumatic gout may affect every joint in the body, and in some cases produces the most surprising deformity. The peculiar deformity of the hand shown

in Fig. 333 is characteristic of this disease. In the case of a young lady whom we had under treatment a year or two ago, all the fingers and toes, both elbows and both knees, were dislocated by the structural changes which had taken place.

Treatment.—Although this disease is a very obstinate one, and generally considered almost incurable, it has been repeatedly demonstrated that the thorough and persevering use of the same remedies recommended for chronic rheumatism will often result in very great benefit to the patient.

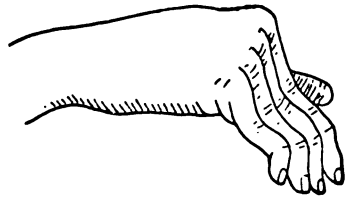


Fig. 333.

MUSCULAR RHEUMATISM.

SYMPTOMS.—Dull pain in the affected part, resembling that from a bruise; pain increased by motion, often of a cramp-like character, and sometimes excruciating; tenderness on slight pressure; pain relieved by firm pressure.

It is probable that this disease is often neuralgic in character, though it is likely that in many cases it is a manifestation in the muscles of the same disease which more often shows itself in the joints. It may affect any part of the muscular system, as the muscle of the scalp, muscles of the face and jaw, muscles of the eye and all other external, as well as internal, muscles. What is termed pleurisy of the diaphragm is probably in the majority of cases really rheumatism or neuralgia of that muscle. The most common forms of muscular rheumatism are pleurodynia, in which the disease affects the muscles of the chest, and lumbago, in which it is confined to the muscles of the back. Pleurodynia is often mistaken for pleurisy and intercostal neuralgia, as it occasions pain upon drawing a long breath as well as from coughing or sneezing. Persons suffering with it often imagine themselves to have some serious lung disease. When it affects the back, producing "crick in the back," the patient can neither bend over nor straighten up, but is obliged to hold the trunk in a stooping position.

The causes of muscular rheumatism are the same as those of other forms of rheumatism. Patients suffering with it generally have dark colored urine which contains large quantities of urates, or uric acid, indicating an inactive condition of the liver. It most frequently occurs in persons who make free use of meat, condiments, salt, and

alcoholic drinks. It is, perhaps, frequently excited by taking cold through exposure to drafts.

The pains of muscular rheumatism are undoubtedly simulated, in many cases, by infection of the muscles with trichinæ. As the capsules in which the parasites are inclosed become chalky from age, they are sources of irritation, as foreign bodies.

Treatment.—The best treatment for muscular rheumatism is the employment of moist heat, the application of hot bags, gentle rubbing, rest, and improvement of the general health. Galvanism, and, in most cases, faradization, give very prompt relief. The same general directions, with regard to treatment, diet, clothing, etc., as have been given for acute and chronic rheumatism, should be followed in this affection as well.

It is especially important that the whole body should be clothed in flannel. The pain in the back may often be greatly relieved by wearing a tight flannel bandage about the body. When severe, a warm poultice may be worn over the seat of the pain. The old-fashioned pitch-plaster, which is so often used for these cases, undoubtedly does some good by retaining the natural warmth of the part and giving the muscles rest.

GOUT.

SYMPTOMS.—Acute pain in great toe, heel, or instep, occurring suddenly; chill, followed by heat; tenderness and swelling of the affected part; fever and restlessness; irritability of temper; constipation; coated tongue; urine dark, with heavy deposit; in chronic cases, enlargement about the joints.

Causes.—The chief causes of gout are the excessive use of meat, the use of stimulating condiments, beer, wine, alcoholic liquors, and high living in general.

Dr. Joseph Drew of Breckingham, England, in an article in the *British Medical Journal* a year or two ago, called attention to the fact that the use of salt is a frequent cause of gout. He had suffered from the disease for over twenty years, until his joints became greatly enlarged. By discontinuing the use of alcoholic beverages, he was very much improved, but the enlargement and stiffness of the joints still remained. It occurred to him that, as the disease was greatly aggravated by the use of cakes, biscuit, or anything which contained soda, as his experience had abundantly proven, it was quite possible that chloride of sodium, or common salt, might also be a cause of aggravation of

the difficulty. The remainder of the account we will give in his own words.

"The idea once started, it was, of course, immediately carried into practice, and chloride of sodium was placed in the *index expurgatorius.* Salt was omitted as an article of diet, not only as a condiment, but avoided in salted meat or any other accepted comestible. The result in four or five weeks has been astonishing. Most of the stiffness has passed away. Finger rings that had been laid aside can be worn, and the phalangeal finger bones have almost returned to their primitive size and shape."

Dr. Drew further remarks that on every occasion on which he had taken any article of food containing soda in any form, he had suffered a relapse, or an increase of his pain and symptoms, even when used in small quantity, and in several instances when he was entirely unaware of the digression.

Treatment.—In a majority of cases, the pain of gout is only a proper punishment for dietetic and other transgressions committed by the sufferer. Complete and permanent cure can only be effected by the adoption of a vegetable diet, and the disuse of all forms of alcoholic beverages. All the habits of the patient must be regulated in accordance with the laws of hygiene. Excess in the quantity as well as in the quality of food should be avoided. He should practice free water-drinking, taking anywhere from four to ten glasses of pure water per day. Abundant exercise in the open air should be daily taken. The affected parts should be carefully protected from the cold. The patient should take daily fomentations over the region of the liver and kidneys, as well as over the affected parts. Either dry or moist heat may be used for the relief of local pain.

In bad cases it may be necessary to employ heat continually. Hot-air, vapor, Turkish, and Russian baths are excellent means of eliminating from the system the waste and excrementitious material which lies at the foundation of this disease. A wet-sheet pack is equally valuable for the same purpose. Wearing of a moist abdominal bandage night and day for several weeks is also a useful measure. During the attack, the affected limb should be elevated above the level of the body, carefully covered with cotton or wool, and the patient should abstain from food almost entirely, for two or three days, taking only a little gruel or toast once or twice a day. A celebrated French author recommends the drinking of six ounces of hot water every fif-

teen minutes during the attack. The active sweating which will be produced by this measure will certainly be conducive to recovery.

SOFTENING OF THE BONES—MOLLITIES OSSIUM—OSTEO-MALACHIA.

SYMPTOMS.—Boring, tearing pain in the bones, relieved by quiet, increased by motion; pain at first thought to be rheumatic; slight fever; much sediment in urine; gait tottering and uncertain; distortion of body and limbs; general health often not impaired for some time.

This is a disease in which the bones undergo a process of softening by the removal of the phosphates and various other earthy matters which give them solidity. Fatty degeneration of the bones takes place, so that they become weak and fragile. The distortion of the body sometimes becomes very great, affecting the whole skeleton. This disease most frequently occurs in women, beginning a short time after confinement, especially in cases in which there has been injury to the pelvic bones, which constitutes a starting point of the disease.

Fig. 334.—Healthy Muscular Fibres.

Fig. 335.—Fatty Muscular Fibres.

Treatment.—Fortunately, this disease is very rare, as it is incurable. The most that can be done is to prevent distortion of the body by proper support of the parts most likely to become deformed.

FATTY DEGENERATION OF THE MUSCLES.

This is a morbid process in which the proper muscular tissue is replaced by little particles of fat. The change in appearance is easily seen by reference to Figs. 334 and 335, in which are shown the healthy muscular fibres and fibres which have undergone fatty degeneration. It occurs in muscles which have long been paralyzed, being the result of their non-use. The occurrence of fatty degeneration in the muscles is one of the results to be guarded against in cases of paralysis. It may be prevented by the daily employment of massage and the use of electricity.

INFECTIOUS DISEASES.

Under this heading will be considered all diseases of a contagious character, together with those which arise from miasma. A contagious disease is one which is communicated by actual contact of an individual with palpable substances, originating in individuals suffering with the disease. Infectious diseases are those which are propagated by means of impalpable substances carried in the air. Nearly all contagious diseases are also infectious. In most infectious diseases, the morbid parts which give rise to the disease proceed from individuals suffering with contagious maladies. In some cases, however, as in the so-called malarial diseases, such a connection cannot be traced.

The Germ Theory of Disease.—The supposed nature of germs has already been considered. (See page 548). In the case of quite a number of the diseases included under this heading, it may be claimed that absolute proof of the existence of microscopical organisms as specific causes of the affections referred to has been obtained through extensive and searching investigations which have been made respecting this subject. In the case of several, while proof is not absolute, the evidence is such as to leave little room for doubt. Recent investigations of the nature and cause of malarial poisoning seem to have shown beyond reasonable doubt that this class of affections depend upon certain low vegetable organisms which are produced in great abundance under conditions known to be favorable to the development of malarial diseases.

Infectious diseases are divided into two classes, acute and chronic. We shall consider both classes together without any other distinction than that of sequence.

FEVER.

Symptoms.—Usually begins with chill; dry, hot skin; full, quick pulse; elevation of temperature; thirst; coated tongue: headache; little or no appetite; nausea; pain in back and limbs.

The above are the symptoms characteristic of fever, a condition which is present in nearly all the diseases included in this section. In the various febrile diseases, numerous other symptoms arise in addition to those which pertain to fever itself, varying according to the particu-

lar affection or the local complications which may arise. Fever is generally understood to be a general disease of the blood. In the majority of cases, its cause is the introduction into the system of poisonous or morbid elements of some sort. When the poison thus received into the system is of an animal or vegetable nature, reproduction usually takes place, occasioning a great increase in the quantity of the morbid element. This explains the fact that a certain period, varying from a few hours or days to several months, almost always elapses after the morbid elements are received into the system before the chief symptoms of the disease make their appearance. This is called the period of incubation.

Fig. 336. Fever Thermometer.

The Temperature.—The natural temperature of the body, when taken under the tongue or in the arm-pit, is 98½°. Only very slight variations occur in health. When the temperature rises to 100° or more, the pulse will almost invariably be found to be increased in frequency. The frequency of respiration will also be increased, and other symptoms of fever will generally be found. It may happen, however, that the increased temperature, as detected by the thermometer, will be the only febrile symptom which can be readily detected at the very beginning of febrile disease, since this is by far the most delicate and reliable means for determining the degree or intensity of febrile action. Fig. 336 shows one of the latest forms of fever thermometer which has been devised. Every family should possess a reliable instrument of this kind, as, by its aid, the first beginnings of disease may sometimes be detected. In using the thermometer, care is necessary to secure correct results. If the instrument be placed in the arm-pit, the arm should be drawn close to the body, with the fore-arm drawn across the chest, so as to cover the instrument as completely as possible. It should be retained in position eight or ten minutes. It is often more convenient to take the temperature in the mouth, the bulb of the thermometer being placed under the tongue, the lips of the patient being kept tightly closed for five or ten minutes. In young infants, the thermometer may be introduced into the rectum. In this location, the temperature is found to be about a degree higher than in the mouth or arm-pit. Before placing the thermometer in position, if it is a self-registering instrument, and no other should be employed, care should be taken to shake the

index down to 90° or 95°, reading from the upper end of the index, which consists of a short column of mercury detached from the main column.

A very accurate idea of the temperature of the body may generally be obtained by means of the hand, if proper precautions are taken to avoid error. In order to judge correctly of the temperature, the hand should be perfectly clean, smooth, and dry, and should be properly warmed before applying to the body; as, if the hand happens to be cold, the body may feel unnaturally hot, although of normal temperture. First, one or two fingers, and then the whole flat surface of the hand should be laid upon the body.

The variations of temperature from that of health differ in various febrile diseases, in some running very high, while in others only a very moderate degree of elevation is noticed. As a general rule, the temperature does not rise above 103° to 105°. A temperature over 107° is very likely to prove fatal, although cases have been known to recover in which the temperature has risen two or three degrees higher. In depression, the condition opposite that of fever, the temperature is lower than normal, sinking even as low as 94° or 95°, or even lower. A very low temperature is as grave a symptom as a very high one; but occurs much less frequently.

The general supposition that a chill is the opposite of fever, is an error. The thermometer shows that the temperature is elevated during a chill as well as during a fever. The temperature may not rise as high, but is considerably above the normal standard. In most of these cases, the thermometer is of course the only reliable means of determining the temperature, as the skin is, not infrequently, cold and the patient shivering, while the internal temperature of the body is much higher than in health.

Classification of Fevers.—We shall not here attempt to give a scientific and elaborate classification of the affections to which the term fevers is attached. Fevers in which the high temperature is continuous from the outset without any very great remission or interruption, are termed continued fevers. To this class belong febricula, typhoid, and typhus fevers, erysipelas and relapsing fever. Periodical fevers are those in which the disease is subject to regular periodical intermissions or remissions. Intermittent, remittent, typho-malaria, yellow fever, and a fever to which the term dengue is applied, belong to this class. Fevers in which the nervous system is very greatly dis-

The diet of a fever patient shoud be very simple, consisting almost wholly of fluid food, as oatmeal gruel, graham gruel, milk, and, occasionally, chicken or mutton broth, or beef tea. We are not much in favor of animal broths, however, on account of their stimulating character. The same objection is valid against the use of beef tea, and especially against the various extracts of beef which are sold at the drug stores, which are almost entirely devoid of nutriment, being of a very stimulating character. No meat nor solid food of any kind, with the exception of toast, should be allowed. Baked sweet apples, ripe grapes, oranges and lemons are about the only fruits which may be safely employed under nearly all circumstances when the stomach does not reject food. When grapes are taken, the skins and seeds should be rejected. Vegetables should be discarded as deficient in nourishment, and hard of digestion. Jellies, rich sauces, preserves, pastries, and other delicacies, should be strictly prohibited. These articles are not only very difficult of digestion, but contain very little nourishment. Milk is an article of food more generally acceptable than any other. It has the advantage of being easy of digestion, and containing all the elements of nutrition. When it can not be taken alone, it may be combined with barley-water or oatmeal gruel, in varying proportions to suit the wish of the patient. When necessary, lime-water may be combined with the milk, in the proportion of one part lime-water to three or four parts milk.

In cases in which the patient is too feeble to take nourishment, or is unconscious and refuses to swallow food when it is placed in the mouth, nutritive enemata should be employed. It is a mistake to suppose that a patient suffering from fever requires no nourishment at all until the appetite returns. The opposite extreme of excessive feeding should also be avoided. If the patient takes no nourishment at all, the depression and weakness resulting from the disease will be very much increased, and death may result from the great weakness occasioned by want of nourishment. Excessive feeding will increase the fever. We have observed cases in which the violence of fever was very greatly increased by the use of large quantities of stimulating food, as beef tea, egg-nog, brandy and milk, etc. The directions sometimes given to feed a patient every few minutes, or every half hour, is pernicious advice, unless the patient is so weak that only one or two teaspoonfuls of food can be taken at a time. Two or three hours is as short an interval as is admissible. As a general rule, it is better

throbbing temples, and a temperature of 102 to 105° or upward, ice to the head and spine, cold compresses over the bowels, frequent cool sponging, and the use of the cool or cold enema once in two or four hours, are the remedies upon which we chiefly depend. By the combined use of these measures, the temperature can almost always be readily controlled. The cold enema is a very useful measure indeed, and is especially serviceable in cases in which the patient complains of chilliness upon being sponged with cold water.

We also value very highly as a means of reducing the temperature, the application of the ice compress to the spine and back. If the patient complains of chilliness, a bag of hot water may be placed at the pit of the stomach. The compress may be continued for from fifteen minutes to two or three hours, care being taken that the skin is not injured by the direct contact of the ice, or the patient annoyed by the cold water from the melting of the ice running down about the body. In extreme cases, the shower pack, or the graduated bath may be employed. We believe, however, that these measures can be dispensed with, even in the most severe cases, if the other measures mentioned, especially the cold enema, are thoroughly employed.

When the fever is high, the patient may be allowed to drink freely of cold water, as by this means an appreciable effect upon the temperature may often be obtained. If at any time, unpleasant sensations are produced in the stomach by taking too much cold or iced water, it may usually be quite promptly relieved by applying a hot fomentation over the stomach. When the patient complains of a bad taste in the mouth and a dislike for water, weak lemonade, slightly sweetened, may be used to very great advantage. Juices of various other fruits, as of apples, raspberries, currents, etc., may be used in the same way as lemon juice. In cases in which the stomach is very irritable and rejects drinks of all kinds, the thirst will often be relieved by giving the patient an enema, as a considerable quantity of fluid may be absorbed by the mucous membrane of the lower bowel. When given for this purpose, as when administered to reduce the temperature, quite a large quantity of water should be employed. It should be introduced very slowly and should be retained as long as possible, half an hour at least. When the disposition to expel the water cannot be readily controlled, a sponge or napkin should be held against the anus for some ten or fifteen minutes. The severe headache which most fever patients suffer, is best relieved by a continous application of cold to the head (page 679).

in two open shanties, the roofs of which were composed of old sails. The first night after the removal, a violent thunder-storm occurred, which was accompanied by torrents of rain. The next morning it was found that the clothing of all the patients was saturated with water. The principal measures of treatment employed, were enemas of lemon juice and cold water. The food was chiefly buttermilk. Four sailors, sick of the same disease, were cared for in a dwelling-house. Two of them died. Every one of the eighty-two emigrants recovered.

The danger of fever patients taking cold by exposure to cool air is much less than is generally supposed. An eminent German physician advocates the use of the cold-air bath, when the cold-water bath cannot be conveniently employed. His plan is to open the doors and windows of the sick-room, and after removing the patient's clothing, place him in such a position that he will be fully exposed to the draft of cold air. We have frequently employed a modification of this plan by stripping the patient, and after moistening the surface with a wet sponge, or the hand dipped in water, allowing evaporation to take place. A marked cooling effect can be produced in this way. If proper care is taken to keep the feet and hands warm, little fear need be felt that the patient will take cold when suffering from a general fever. The temperature of the room should be kept as low as possible without inconveniencing the patient. As a general rule, sixty to sixty-five degrees is a proper temperature. Seventy degrees should rarely be exceeded.

In many cases the discharges of the patient are the most efficient means for communicating the disease. They should be promptly and thoroughly destroyed by the use of disinfectants. The night-vessel should constantly contain a solution of copperas, or a strong solution of chloride of zinc or permanganate of potash. This will secure disinfection of the discharges as soon as passed. Immediately after it has been used, the vessel should be removed from the room, and its contents buried in the earth, at a safe distance from any well or cistern. (See pages 441 and 442). The discharges of a patient suffering with any contagious or communicable disease, should not be placed in a common privy or water-closet. A neglect to observe this precaution has often resulted in the wide dissemination of infectious maladies. For the majority of fever-patients, careful nursing is more indispensable than the most skillful medical treatment. With careful nursing alone, the majority of patients will recover.

FEBRICULA.

SYMPTOMS.—Attacks generally abrupt; weakness; loss of appetite; chilliness; skin very hot; pulse rapid; severe pain in forehead; pain in back and limbs; constipation; urine scanty and dark.

This disease is also known by the names ephemeral, irritative, or inflammatory fever. It is the mildest form of fever, and generally lasts from one to three days, though it sometimes continues a week or ten days. It is not accompanied by delirium, and is distinguished from typhoid fever by the absence of the characteristic symptoms of that disease.

Causes.—The principal causes of febricula are overwork, overeating, loss of sleep, sexual excesses, and exposure to the heat of the sun. It is probable that many cases supposed to be febricula are really cases of typhoid fever in which the disease is checked before its characteristic symptoms are manifested.

Treatment.—Rest in bed, fasting for a day or two, and the use of cool or tepid sponge baths, compresses, and enemas. Patients always get well.

TYPHOID FEVER.

SYMPTOMS.—Lassitude; irregular chills, sometimes followed by perspiration; frequently headache; confusion of mind; irritability of disposition; no appetite; nausea or vomiting; nosebleed; pain in back and limbs; looseness of the bowels; as the disease advances, countenance becomes dull and stupid; cheeks, hands, and arms red, or of a dusky hue; wakefulness; more or less delirium in severe cases; patient talks in his sleep, tries to get out of bed, picks at the bedclothes, etc.; jerking movement of the tendons at the wrist; tongue coated whitish, yellowish, or brownish, usually smooth and glassy, or dry and hard—tremulous; a brownish accumulation on teeth and lips; bleeding of lungs; bowels distended with gas; tenderness low down on the right side; gurgling on pressure; hemorrhage from the anus or bowels, or both; a few slightly elevated rose-colored spots on the abdomen; fever less in the morning; increased in the evening; pulse ninety to one hundred and twenty.

This is a general febrile disease, attended by local affection of the glands of the small intestines. For several days preceding the attack, the patient feels weak, debilitated, and a general indisposition. What is termed the forming period of the disease lasts about four days. The severity of the attack is indicated by the temperature. When the thermometer shows a temperature of 106° or 107°, the case may be considered a very grave one. The severity of the disease itself is often greatly increased by complications, the most serious of which are pneumonia, inflammation of the parotid glands as in mumps, peritonitis,

hemorrhage. The duration of the disease is generally from two to four weeks. The popular belief in critical days does not seem to have a very solid foundation. In some cases, the brain symptoms do not disappear with the occurrence of convalescence. In occasional instances, the illusions or delusions incident to the delirious stage of the disease continue for a short time after all other symptoms have disappeared. Recovery from this condition generally takes place, however, in from one to three weeks. In a case of this kind which occurred in our practice a few years ago, the patient was subject to marked religious delusions, which disappeared, however, in a very short time, as his strength returned. Cases frequently occur in which the symptoms of disease are not sufficiently severe to confine the patient to bed. These are termed "walking cases" of typhoid. As a general rule, patients gain flesh very rapidly after recovery begins, often acquiring a greater weight than at any previous time.

Causes.—Typhoid fever is, by many physicians, supposed to be produced by a specific germ, which is communicated chiefly by means of the bowel discharges. It is believed that when the discharges are mingled with other human excreta, as in privy vaults, sewers, etc., the germs will affect the whole mass. Others believe that the germs may originate outside of the body, under certain conditions. This theory does not necessitate belief in spontaneous generation, as it is held that germs which, under ordinary circumstances, may not give rise to disease, or, under certain other peculiar circumstances, may give rise to other diseases, may, under circumstances not fully understood, but the existence of which is entirely possible, give rise to the disease known as typhoid fever. These germs, however they may originate, are generally received into the system by means of drinking-water. Wells and cisterns often become contaminated by means illustrated and described on plates XV and XVI. Milk has also been known to be a carrier of typhoid-fever germs, becoming infected through the use of water containing germs either in diluting the milk, or in washing the milk cans or other vessels in which it was placed. It has also been claimed that milk may be contaminated through the drinking of infected water by cows. Recently an epidemic of typhoid fever in which a large number of persons were affected by the disease, occurred in Germany, the cause of which was traced to the use of soup made from the flesh of a calf which, as was afterward proven, had died of typhoid fever.

It is thought by some that the inhalation of sewer gas, and of the foul odors from neglected privies, cesspools, etc., may occasion typhoid fever; but it is probable that, in these cases, the disease is somewhat different in character, although allied to this affection. Fever originating in this way has been termed cesspool fever.

Treatment.—Typhoid fever is clearly a preventable disease, which may also be said of all other infectious and contagious diseases. Since its communicability has been established beyond question, it is of the greatest importance that proper measures should be taken to prevent the contraction of the disease by others, as well as for the relief and recovery of the persons suffering. The proper preventive measures to be adopted are careful examination of drinking water, and all other possible sources of contamination, thorough ventilation of the sick-room of patients suffering with the disease, destruction of the germs in the discharges of the patient by disinfection and burying at a safe distance from any well, cistern, or other sources of water supply.

The general management of the disease should be precisely as has been described for fever. (See page 1182.) In many cases, by the adoption of vigorous measures, especially by the employment of the wet-sheet pack, hot-air bath, Turkish bath, and other means for exciting vigorous perspiration at the outset of the disease, its career can be cut short. We have succeeded in a number of instances in breaking up the disease when it had advanced sufficiently far to leave little doubt as to its real character. The fever should be controlled by means of sponge baths, cold compresses to the bowels, ice packs, and cold enemas. The delirium and sleeplessness are best relieved by ice compresses, or the ice pack applied to the head. When discomfort is occasioned by pain or gas in the bowels, fomentations should be applied once or twice a day, or every three or four hours, according to the requirements of the case. The use of stimulants is seldom called for. We occasionally employ them, when the patient seems to be sinking with exhaustion from the long continuance of the disease, but do not feel at all certain that we have ever obtained any marked benefit from their use.

In the treatment of a large number of cases of this disease, we have had no occasion for the employment of such large doses of quinine as have lately been recommended by some eminent German physicians. In a few cases in which we have given this remedy a

trial, the benefits derived from its use, as shown by the decrease in bodily temperature, were so insignificant when compared with the effects which could be obtained by the employment of other measures already described under the treatment of fever, that we had no desire whatever to resort to it again. The cold enema produces far more decided and permanent results than the largest doses of quinine which can be safely given, and is quite free from the unpleasant after effects of this drug. If the patient is very greatly troubled with inability to sleep, mild doses of gelsemium may be employed when other means fail; but if the head is kept cool by cold compresses changed every few minutes, or the ice pack or cold-water bag, very little difficulty will generally be experienced.

It is frequently the case that the patient is not out of danger when convalescence begins, as hemorrhage from the bowels may occur even after the disappearance of most of the other symptoms of the disease. The only typhoid fever patient we ever lost, was one in whom hemorrhage from the bowels occurred after convalescence seemed to be fully established. The patient gave marked symptoms of tuberculosis when attacked by the fever, and although the disease ran a very mild course, seeming to be very easily controlled by treatment, the patient finally died in consequence of the unfortunate accident referred to, which was probably due to the relaxed condition of the blood-vessels, and the generally debilitated condition of the system.

Perforation of the intestines by ulceration may also occur at a very late period, giving rise to inflammation of the peritoneum, and thus occasioning death. The patient should be very careful not to take solid food of any kind, especially meat, for some little time after convalescence is fully established, as the stomach becomes very greatly weakened in this as in most other febrile diseases, the secretion of gastric juice being almost suspended, and not being fully established for some time after recovery begins, making the digestion of meat more difficult that that of other foods. The directions given under treatment for fevers, respecting diet, ventilation, nursing, etc., should be carefully followed.

The proportion of deaths in typhoid fever under ordinary methods of treatment are stated by Dr. Flint to be about eighteen to twenty-five in a hundred. Very often the fatality has reached a much higher per cent than this. According to M. France Glenard, between six and eight thousand cases of typhoid fever have been treated by a

method essentially the same as we have described, with an average mortality of only about six per cent. Stieler treated a large number of cases at Munich, losing less than six per cent. Jürgenson reports a mortality of only three and one-tenth per cent. Brandt claims to have lost only two and one-tenth per cent. Glénard treated fifty-two cases at Lyons without a single death. We might mention many others who have been equally successful, but will only add our own experience in the treatment of sixty cases, by the aid of an assistant physician and a medical student, without losing a single patient, although in many cases the disease appeared in its worst form. When the plan of treatment pointed out can be pursued thoroughly and systematically from the outset, death will result in only a very small proportion of cases.

TYPHUS FEVER—SHIP FEVER.

SYMPTOMS.—Before the attack, slight chills; headache; disturbed sleep; no appetite; cough; coryza. The attack generally begins with severe chill, followed by continued fever; patient confined to bed; heaviness and numbness in head; dizziness; flashes of light before the eyes; noises in the ears; deafness; pain in the limbs; trembling; stupor; delirium; pulse one hundred or more; temperature high; urine scanty; eruption, resembling that of measles, but not appearing on the face; thick, brown coating on the tongue.

The common name for this affection is ship-fever, which is derived from the fact that the majority of cases occurring in this country may be traced to importation through immigrants, particularly those coming from Ireland, where the disease occurs much more frequently than in this country. The symptoms of this disease are very similar to those of typhoid fever,—stupor and delirium being still more characteristic of typhus than of typhoid fever. It occurs most frequently in years of famine, when people are badly fed, and seems liable to attack persons in military camps, prisons, crowded barracks, tenement houses, and on shipboard where a large number of persons are crowded into poorly ventilated cabins. The active symptoms of the disease generally terminate quite suddenly with a profuse perspiration, after which the patient slowly recovers. The disease is very contagious.

Treatment.—With reference to the treatment of this condition, the eminent Lebert remarks, "Drugs, as such, are unnecessary. I give them chiefly to satisfy the patients and their friends." The same plan of treatment may be followed which has been recommended for typhoid fever. Especial attention should be given to the application of cold or

ice compresses to the head, as by this means the stupor and delirium will be greatly relieved. The frozen compress applied as elsewhere directed may be usefully employed.

If the patient bears cold treatment well, compresses and sponge baths at a temperature of sixty or seventy degrees should be employed as far as possible to keep the fever subdued. The cold enema should be resorted to whenever other measures fail to give prompt relief. If the patient is very restless, a warm bath or warm blanket pack may be employed, the head being kept cool during the application by the ice-cap or rubbing with ice. The same care respecting diet, ventilation, disinfection, etc., should be observed as directed for typhoid fever. After the patient's recovery, the clothing, and everything used about the patient, should be thoroughly disinfected by exposure, in a tight compartment, as, for instance, a bleaching box, to the fumes of burning sulphur. The room in which the patient has been sick, should be disinfected in the most thorough manner. The paper should be removed from the walls, carpet from the floor, and after thorough disinfection with sulphur (see index), should be thoroughly scrubbed and newly whitewashed. These measures should be attended to with very great thoroughness as the disease is a very communicable one.

RELAPSING FEVER.

SYMPTOMS.—Begins with a chill, followed with high fever; great weakness; headache; dizziness; ringing in the ears; pain in back of neck, small of the back, and in the limbs; general muscular pains throughout the body, increased by pressure or movement; unnatural sensitiveness of the skin; tongue white, with red tip; pulse from one hundred and ten to one hundred and twenty; temperature rises rapidly from one hundred and seven to one hundred and nine degrees; catarrh of the pharynx; usually constipation, but occasionally diarrhea; liver inactive, generally enlarged; spleen greatly enlarged; urine scanty, containing bile; at the end of one or two weeks, crisis, with sudden disappearance of fever and pain; after six or eight days, return of previous symptoms; three or four relapses may occur.

Causes.—According to Lebert, the cause of relapsing fever is a peculiar microscopical organism which appears in the blood of the patient suffering with this disease, in the form of delicate spiral filaments, which are about $\frac{1}{25000}$ of an inch in diameter, and $\frac{1}{125}$ of an inch in length. They are coiled in a spiral form, and have a lively, twisting motion. The disease is clearly contagious, being communicated by the conveyance of these parasites from one person to another. It is probable that drinking-water is one of the most common measures of communication.

Bad food, unsanitary conditions, and crowding of many people together are the principal predisposing causes. Some observers believe that the disease may be communicated by contact of one patient with another. Various epidemics of this disease have occurred, particularly in England, Ireland, Scotland, and Russia. The Irish epidemic extended over a large portion of that country, lasting four years. In 1847, the disease was imported into this country from Ireland. A few years ago an epidemic of the disease occurred in Berlin.

Treatment.—Fortunately, this disease is not a very fatal one. With reference to its treatment, Lebert says, "My recent, as well as my former, experience, has demonstrated the fact that there is no drug which may be said to exercise any direct influence upon the course of the disease. The expectant plan of treatment, therefore, is the only proper one. Rest in bed, fresh air, cleanliness, fever diet, milk, soups, meat broths and cooling drinks, are the principal things to be attended to." "Clear, pure water, and carbonic acid water, are, as a general thing, the beverages best borne." The general treatment recommended for fever should be pursued. Ice should be applied to the head to relieve the headache, cool sponging, compresses, and cool enemas, should be used to reduce the temperature. When the pain is severe, it may be relieved by the hot blanket pack, applied once or twice a day for half an hour. The majority of patients have a craving for acid, and may take lemon juice as freely as desired. For the soreness and pain at the pit of the stomach, apply hot fomentations three or four times a day, fifteen or twenty minutes each time. As this is a contagious and infectious disease, the same precautions should be taken respecting disinfection during and after the attack as has been recommended for typhoid and typhus fevers.

BILIOUS TYPHOID.

SYMPTOMS.—Pain in the head; dizziness and faintness; chills; pain in the limbs, especially the muscles and joints of the legs; continuous fever; restlessness; coated tongue; vomiting watery or bilious matter; soreness at pit of stomach; after a few days, temperature rises very high; skin dry and hot, or red and sweating, the headache intense; eyes red; roaring in the ears; obtuseness of the mind; diarrhea; pain in the region of the spleen and liver from enlargement af those organs; jaundice; disease lasts from ten to fourteen days.

This disease, in some respects, resembles the first attack of relapsing fever with which it is often combined.

Causes.—Although the disease has not been very thoroughly studied

as yet, having been recognized but a short time, it is believed to be infectious in character, although probably not contagious.

Treatment.—The treatment is the same as that previously recommended for relapsing fever. When the diarrhea is troublesome, apply cold compresses over the bowels, and administer cool enemas three or four times a day.

YELLOW FEVER.

SYMPTOMS.—Disease usually preceded for two or three days by lassitude, headache, no appetite. pain in the head, chilliness.

FIRST STAGE: ***Begins with chill, followed by fever; severe headache; pain in back, and lower limbs; tenderness at stomach; nausea and vomiting; eyes red and watery.***

SECOND STAGE: ***After one to three days, fever and other symptoms abate or cease; patient may improve until recovery takes place.***

THIRD STAGE: ***Severity of symptoms reappear, greatly aggravated; jaundice; black vomit; nosebleed; at last, stupor.***

This disease has attracted much attention within the last two or three years on account of the terrible epidemics which have almost depopulated some portions of the South. The symptoms above given present but an imperfect picture of the disease, as every case is more or less modified by individual peculiarities, and various other circumstances. The disease seems to vary in different epidemics, in some cases running a mild course, in others, raging with a violence and intensity which sweeps all before it. In addition to the black vomit, due to hemorrhage from the stomach, albumen in the urine, from acute inflammation of the kidneys, is a very grave symptom which is present in the great majority of cases.

Causes.—Careful investigations of this subject recently made under the auspices of the American Public Health Association, the Yellow Fever Commission, the National Board of Health, and various local sanitary organizations, have resulted in throwing great light upon the nature of this grave malady, although there are many questions of importance which cannot be said to be perfectly settled. There is little room left for doubt, however, as to the contagious nature of the disease, while its infectious character is fully established. It is generally considered as proven that the disease is directly due to infection of the system by a specific germ, although there is still considerable discussion as to whether this germ necessarily originates with the yellow fever pa-

tient, or may be developed independently under certain unsanitary conditions.

Treatment.—The first and most important measure of treatment to be considered in the management of an epidemic of this disease is prevention. The ravages of the malady cannot be checked in any way but by the enforcement of the most rigid quarantine, and the employment of vigorous disinfection. The most scrupulous attention to sanitary measures of all kinds is absolutely necessary. A patient suffering with the disease should be isolated from those who are well. Depopulation of the infected cities was found to be one of the most efficient measures for checking the progress of the epidemic during the prevalence of the disease in the South, in 1878–79. The measures employed in the active treatment of this disease have been as diversified as the theories of its origin. Some physicians have employed mercury, quinine, whisky, and other drugs, in large quantities, and others have declared with emphasis that no benefit is derived from the use of drugs. In analyzing the course of treatment prescribed by a large number of physicians who have had experience in the treatment of this disease, we have observed that there is a decided tendency on the part of those who have had the most experience, especially in severe epidemics, to rely more and more upon hygienic measures.

Col. J. M. Keating, of Memphis, Tenn., Editor of the Memphis *Daily Appeal*, has prepared a very complete history of yellow fever, and the yellow fever epidemic of 1878 in Memphis, which contains, among much other valuable matter, a full description of the various plans of treatment pursued by the most eminent physicians of Memphis, Louisville, New Orleans, and other cities subject to this disease. The treatment pursued by Dr. R. W. Mitchell, who was medical director of the Howard Association of Memphis, and is now a member of the National Board of Health, seems to be a very rational method, and, as Dr. Mitchell says, is "the plan of treatment which observation and experience have proven to be the best." Dr. Mitchell remarks further, respecting the treatment of the disease, "Being self-limited and one of very short duration, what could possibly be the aim of rational treatment beyond warding off complications, and sustaining nature?" In accomplishing this, Dr. Mitchell prescribes little or no medicine. He directs the patient to be put to bed as soon as the attack occurs, and kept there until convalescence is fully established. As the disease begins with a chill, measures should be promptly taken to bring about

a reaction. This may be best accomplished by covering the patient with woolen blankets, putting the feet into a tub of hot water, introduced under the bedclothes, and surrounding him with hot bags bricks, bottles filled with hot water, etc. When the bowels are constipated, the patient should take a thorough enema. The pain in the head is best relieved by cold applications ; the pain in the back may be relieved by fomentations. Gentle perspiration should be kept up for fifteen to twenty hours by keeping the patient covered with warm blankets, or giving him warm drinks. If the fever rises very high, cool or tepid sponging with water, or equal parts of water and alcohol, should be applied every hour or two. The cold enema may also be employed with advantage. If suppression of the urine occurs, the fever being very high, ice compresses, or compresses of ice and salt, should be applied over the small of the back for fifteen or twenty minutes at a time and repeated every thirty to sixty minutes. To relieve the soreness of the stomach, apply hot fomentations. To relieve vomiting, let the patient swallow small bits of ice.

No food should be taken for two or three days, and then should consist of barley-water or thin oatmeal gruel, milk and lime-water in the proportion of three parts milk to one of lime-water, chicken broth, or some equally simple and nutritious food. When convalescence is established, the quantity of nourishment may be gradually increased, but no solid food should be taken for two or three weeks. When a patient suffers with a great degree of muscular soreness, a warm pack may be given occasionally. The vapor bath is recommended by many physicians, and others have employed cold baths with advantage. Dr. Mitchell declares that when his plan of treatment is scrupulously followed, a large majority of cases recover.

THE PLAGUE.

SYMPTOMS.—Chill, followed by fever; dizziness; thickened speech; high fever; tongue coated, becoming dry and cracked, and covered with black crusts; delirium, followed by stupor; swelling of the glands in the groins, armpits, and around the neck; black and blue spots on the skin.

This is a disease which, fortunately, seldom, if ever, visits this part of the world, although it prevails more or less at intervals in Turkey, Prussia and Russia. Its severest ravages are confined to the region of the Black Sea. The disease is both infectious and contagious. It is usually developed in from two to seven days after exposure. It is

very fatal, running its course in from three to five days. Eighty to ninety per cent of all who are attacked, die. When recovery occurs, improvement begins the latter part of the first, or by the middle of the second week. Patients who survive the first week, generally recover.

In the Middle Ages, this malady frequently prevailed to such an extent in some of the European countries as to almost depopulate them. Terrible epidemics of the disease occurred in Egypt and Assyria before the Christian era. Several times this malady has seemed to die out, but has broken out anew, and it is probable that it continues to exist in a mild form in some of the countries which appear to be its native home. It is undoubtedly the most fatal of all infectious diseases.

Treatment.—In respect to no disease have the advantages of thorough quarantine been so thoroughly illustrated as in this. The necessity for isolation of infected indivuals was well understood many years ago. When the plague broke out in a little town in lower Italy, an army was sent to prevent any individual from escaping into the surrounding country, and in order to make the quarantine more complete, the village was surrounded by three deep ditches, which were kept by soldiers under strict orders to shoot any individuals who attempted to escape. Almost equally vigorous measures were taken by the Russian government during the recent epidemic in that country. The good results were shown in both instances in the staying of the progress of the disease. There is no special plan of treatment which seems to have any particular influence upon this terrible malady. The best that can be done is to treat patients upon general principles. At the beginning of the disease, when the fever is high, cold should be applied. Fomentations and poultices should be applied to the suppurating glands.

The Black Death.—This is a malady which very closely resembles the plague, and is, by some authors supposed to be identical with it. In the fourteenth century, an epidemic of this disease spread over the whole known world, destroying a great proportion of the human race. It is probably still perpetuated in some provinces of East India, particularly in the vicinity of the Himalayas.

SWEATING SICKNESS—MILIARY FEVER.

SYMPTOMS.—Attack preceded for two or three days by irritation of the skin, dryness of the mouth, thirst, headache, general weakness, bad feeling in the stomach, with peculiar sensation; ringing in the ears; dizziness. The disease generally begins in the night with a chill, or chilliness, followed by very profuse sweating, which is accompanied by prickling and stinging of the skin; skin hot; pulse exceedingly rapid; extreme headache; palpitation and pulsation at the pit of the stomach; stomach sensitive, painful on pressure; occasional spasms in limbs; rash appears on the third to the seventh day, other symptoms being aggravated; eruption consists of small, round, irregular spots, which vesicate and burst in two or three days; rash first appears on side of the neck and chest, extending downward upon the back and lower extremities; great restlessness, often delirium.

Causes.—Very little is known concerning the cause of this malady, although it is believed to be a germ disease. It is sometimes a very fatal malady, though in its epidemics, few fatal cases have occurred.

Treatment.—The treatment consists in allaying the fever in the first stages of the disease by means of cold compresses, sponge baths, cool enemas, ice to the spine, etc. Especial attention should be given to thorough ventilation, and also to such other measures as have been recommended for the treatment of other infectious diseases. Bathing the skin with warm solutions of alum or vinegar is a useful measure, much employed in Germany. The pain at the stomach is best relieved by cold applications.

ERYSIPELATOUS FEVER—BLACK TONGUE.

SYMPTOMS.—Fever, erysipelatous swelling of various parts of the body, most often the head; in severe cases, delirium; neuralgic and rheumatic pains.

Erysipelatous fever is distinguished from the local disease known as erysipelas, which is generally accompanied by fever, by the fact that in this disease the fever makes its appearance first, and the local disease afterward, while with the local affection the opposite is the case. The disease sometimes occurs in epidemics, some of which are very fatal. This was especially true of an epidemic which occurred thirty or forty years ago in different parts of the United States, which was characterized by peculiar blackness of the tongue, from which it obtained the name *black tongue.*

This disease, like others of this class, is in all probability produced by the reception into the system of certain germs. Different observers have

traced a similar connection between this and other infectious diseases, but nothing very positive has been established.

Treatment.—The general fever should be treated by the same measures which have before been recommended for the treatment of fever, page 1182. The local manifestations of the disease should be treated by means of cold applications at first, followed by warm applications or poultices; when the heat and redness gives place to a blue, purple, or scarlet hue, with cold ones.

DENGUE—BREAK-BONE FEVER.

SYMPTOMS.—Loss of appetite; chilliness; lassitude; after one to four days, fever, lasting from nine hours to four days, attended by pain in the head, eyes, muscles of the head, back and limbs; then fever and other symptoms diminish; after three or four days, symptoms return; general eruption occurs which may resemble scarlet fever, measles, nettle-rash, or chicken-pox; in some cases, the patient suffers with nosebleed or bloody diarrhea.

This is not a very common disease, but several quite extensive epidemics have occurred in Charleston and other cities in the South. In one epidemic, all the inhabitants of a town of moderate size suffered from the disease with the exception of half a dozen who had had it before.

Fortunately, the disease is not very fatal, although recovery is usually very slow. It is thought by those who have observed it, to be both infectious and contagious.

Treatment.—The fever should be subdued by cool or tepid sponging, cool compresses, and cool enemas. Pains in the back and limbs are best relieved by warm baths, hot blanket packs, and hot sponging; cold should be applied to the head to relieve the headache. The diet should be very spare.

INFLUENZA—CATARRHAL FEVER.

SYMPTOMS.—Chilly sensations and flashes of heat; cold in the head, with copious, irritating discharge; eyes red and tearful; tickling in the throat; hoarseness; soreness of the throat; dry, irritating cough; pain and difficulty in breathing; great weakness; high fever; sleeplessness, or unnatural drowsiness; duration of disease three to ten days.

This a disease which often affects whole cities or States at the same time, often making its appearance with great suddenness. Not infrequently lower animals are affected at the same time with human beings. The disease is undoubtedly infectious, though not contagious. It is rarely fatal, recovery usually occurring within a very few days,

although local irritation of the air-passages and general weakness may continue for some time.

Treatment. Warm blanket packs, vapor baths, hot-air baths, fomentations to the lungs, and cool or tepid sponging, with cool compresses when there is considerable fever, are the most important measures of treatment. The inhalation of hot steam should be tried when there is much bronchial irritation. When the nasal passages are obstructed, much relief will often be obtained by rubbing the nose with sweet oil or vaseline. Lard or fresh butter will answer the same purpose.

MUMPS, OR PAROTITIS.

SYMPTOMS.—Slight fever; headache; loss of appetite; swelling near the lobe of the ear, accompanied by heat and pain; motion of jaws painful and difficult.

This common disease of childhood usually runs a very mild course. The patient has first a chill, or slight shivering, followed by slight fever for two or three days, in most cases, when the parotid gland begins to swell, usually upon one side at first, the swelling being behind the angle of the jaw near the lobe of the ear. In some cases pain on motion of the jaws is the first symptom. After a little, the swelling extends to the other side. The swelling also extends to the throat, sometimes embarrassing respiration. The patient does not usually suffer much pain when quiet, but eats and talks with difficulty on account of the pain caused by motion of the jaws. After five or six days the fever ceases, and in the course of eight or ten days the patient is well again. It sometimes happens, however, that instead of so prompt and favorable a termination, suppuration takes place. The swelling becomes very painful, hard and dark red, and matter forms, which is discharged through an opening in the cheek or through the external canal of the ear. Another complication, known as *metastasis*, also sometimes occurs. In these cases the disease seems to subside in the parotid gland and makes its appearance somewhere else. In males the testicle and scrotum are the parts affected; in females, the breasts, vulva, or ovaries may be affected. In some instances the membranes of the brain become the seat of the inflammation. The disease occasionally runs its course in the original place and the new seat at the same time. In most of these cases, as well as in the simpler form of the disease, the inflammation subsides in a few days and complete recovery takes place. Suppuration may occur, how-

ever, in any of the parts affected, and hence the danger is increased by these complications.

Cause.—This is an epidemic disease, and is generally believed to be contagious. The period of incubation, that is, the length of time which elapses after exposure before the symptoms of the disease appear, is six to fourteen days. The disease affects males more frequently than females, and children more often than adults.

Treatment.—Prof. Vogel, an eminent German physician, asserts that mumps ordinarily require no medicinal treatment, and that "avoidance of injurious influences, rest, anti-febrile [vegetable] diet, and equable warmth, suffice, as a rule, for the restoration of normal health." Instead of "heating herb-bags or cataplasms," he recommends simple inunctions of the affected parts, and the use of ice-compresses. He explicitly states what many people will undoubtedly learn with surprise, that "the use of cold is never dangerous" in this disease. Irritating liniments, mustard plasters, and even blisters and other means of counter-irritation, have been employed as local remedies to prevent metastasis, a change of the seat of the disease. We believe these substances to all be injurious and prejudicial to recovery ; and we are glad to find our view supported by so eminent an authority as the renowned Dr. Niemeyer, who well remarks that "experience has shown such treatment can only prove injurious." Our plan of treatment is the following :—

The patient is directed to abstain entirely from the use of all animal food but milk, which may be taken if it does not disagree with digestion. The diet is made to consist chiefly of cooked fruits, and grains in the form of gruels, as oatmeal and barley gruel, with softened graham toast. This the patient can eat easily. Cool, acid drinks are allowed to be taken freely. One or two warm, not hot, baths, or two or three tepid sponge baths, should be taken daily if there is much fever. Warm sitz baths are especially useful as derivative means of treatment, relieving the pain and congestion when it is severe. They may be employed once or twice a day in severe cases. When given at a temperature of 95°, the bath may be continued for ten minutes; at 90°, nine minutes; at 85°, one minute. Apply to the neck cool or cold compresses, according to the intensity of the inflammation. When the cold becomes unpleasant, as it frequently does, apply mild fomentations for fifteen or twenty minutes, when the cool compresses may be renewed for an hour or two, or until they become unpleasant again, then being exchanged for the

fomentations for a short time. By this means, constant applications may be kept up and the severity of the disease much mitigated and its duration shortened. If evidences of suppuration appear, exchange the cool compresses for fomentations or a poultice, so as to hasten the process, and have the abscess opened with a lancet as soon as the evidences of the presence of matter are distinct. A safe rule is to continue the application of cold so long as the swelling is hard and acutely painful to pressure; when a softened place is to be felt in the middle, fomentations should be applied. If the bowels are constipated, they should be relieved by means of the enema, and by the employment of manipulation and fomentations of the abdomen.

Metastatic parotitis is a form of inflammation of the parotid gland which occurs in connection with other diseases. It is not contagious. The principles of treatment are the same as those given for mumps. Suppuration is much more common in this form.

CHOLERA.

SYMPTOMS.—THREE STAGES. *1. Vomiting and purging; fluid stools resembling rice-water. 2. Contracted pupils; spasms; cramps in abdomen and lower limbs; skin cool; pulse intermittent. 3. Suppression of the urine; great thirst; feeble pulse; difficult breathing; tongue and breath very cold; lips and skin blue; voice husky and unnatural; features pinched and shrunken; headache; drowsiness; coma.*

The symptoms are not very greatly different from those of bad cases of cholera morbus. In fact, when cholera is prevailing, it is generally considered impossible to distinguish between the two diseases. The disease may vary in intensity from simple cholerine to the gravest form of the disease. When an epidemic is prevailing, all cases should be subjected to vigorous measures of treatment.

Causes.—True, or Asiatic, cholera is one of those much-dreaded diseases which occur in epidemics, frequently almost depopulating the infected districts, often half of those attacked by it dying within a few days. The disease is undoubtedly a contagious one, being communicable from one to another, though not exactly in the same sense that smallpox, scarlatina, and similar diseases are contagious. Experiments have shown that the disease is not communicated by the direct or indirect contact of the body of the person affected, by the products of respiration, or by exhalations from the skin, but by discharges from the bowels. They are supposed to contain a specific germ peculiar to this disease, and the real cause of the affection. Facts seem also to support the idea that the germs of the cholera disease are less active in the

bowel discharges when they are fresh than after decomposition has progressed for a few days. The circumstances which favor the decomposition of organic matter seem very clearly to favor the extension of cholera after it has once been introduced. Careful investigations have clearly shown that the most common means by which cholera poison reaches the system is through drinking-water, and perhaps, in some instances, food. Wells become contaminated from cesspools, sewers, etc., which have received the discharges from a cholera patient, and thus the disease is sown broadcast. The native home of cholera seems to be in India, where in certain districts it constantly exists, being disseminated to neighboring countries, even to the most distant parts of the globe, through various means of human intercourse. A singular periodicity in the occurrence of cholera has led some visionary theorists to very strange conclusions respecting its cause. Observing that the great epidemics of the disease occurred about every twelve years, a certain Dr. Knapp of Mexico originated a few years ago the idea of planetary pestilence, his theory being that the disease is caused by the increased planetary attraction "incident to the perihelion of Jupiter, which also occurs once in twelve years." Dr. Knapp based his theory wholly upon the fact that the perihelion of Jupiter and the occurrence of great cholera epidemics take place in the same year. Taking this for a starting-point he proceeded to predict the occurrence of cholera and other epidemics with unexampled severity in the next decade,—1880–1890,—during which time the perihelion of Jupiter and that of several other large planets occur in conjunction. All that is required to show the fallacy of this theory is to find a sufficient explanation for the periodicity of cholera epidemic. This explanation is found in the following facts: The natives of India make periodical pilgrimages to Hurdwar, at the head of the Ganges. "Hundreds make the Juggernaut pilgrimage every year. Much larger numbers make the journey every third year. Every sixth and ninth years the number is still greater; and once in twelve years an immense throng, numbering more than three million people, make this long pilgrimage.

"Poor food, impure water, together with depressing meteorological conditions and the entire absence of any sanitary precautions, result in the production of the disease well characterized as Asiatic cholera. There is more or less of the disease every year; but once in twelve years, at the great pilgrimages, it assumes such proportions that it extends beyond the limits of its original habitat and carries devastation

to thousands of households in the larger cities of Europe and even of this country.

"Once in sixty years there gathers at Hurdwar a throng of pilgrims still greater than is collected at the twelve-year pilgrimages. The consequence is the production of a still more formidable cholera scourge, of sufficient malignancy and strength to sweep over the greater portion of the Western as well as the Eastern continent before it is checked by the approach of the cold season."

The above statements are fully sustained by the eminent Dr. Peters, who has written a work in which he claims that since 1826 the cholera has regularly occurred as an epidemic at intervals of twelve years. He attributes the origin of each epidemic to the annual pilgrimages. He traces the course of two of these epidemics as follows:—

"In 1826 it became epidemic in Hindostan, its native home, and gradually spread until, in 1829, it was distributed throughout Russia, reaching England in 1830–'31.

"In the spring of 1832 it was brought to Quebec, whence it was carried up the St. Lawrence and across the lakes to Detroit, where it met the United States troops going to the Black Hawk war. It was distributed to all the national posts and forts in the then extreme West, being specially severe at Fort Dearborn, Chicago, Fort Crawford, near Prairie Du Chien, and Fort Armstrong, at Rock Island. From the latter place it was carried down the Mississippi River, striking New Orleans in October of the same year.

"Twelve years thereafter, or in 1841, this contagion started in another tour around the world. It was found at Hurdwar in 1843; at Afghanistan, in Persia, in 1845; at Teheran in 1846; and Astrakhan in 1847. In 1848 it reached Havre, and was carried to New Orleans in some German emigrant ships the same year. From New Orleans it followed the travel up the Mississippi and along the Ohio. From St. Louis it was carried over the emigrant route to San Francisco, and eventually was distributed over nearly the whole country. Thus it will be seen that within the space of fourteen years the country suffered two visitations from the terrible plague. The first time, being introduced at Quebec and following the rivers and lakes, it reaches New Orleans by going down the Mississippi; the second time, it starts at New Orleans and goes up the river, and is thus distributed."

The *Times of India* clearly traces the origin of the last epidemic to the same source. The epidemic began in 1867. "In that year three

millions of pilgrims, of whom a handful had come from a cholera district, assembled at Hurdwar, a few miles from the spot where the Ganges escapes from the Himalayas. On the 12th of April the three millions resolved to bathe and drink. The bathing-place of the pilgrims was a space 650 feet long by 30 feet wide, shut off from the rest of the Ganges by rails. Into this long, narrow inclosure, pilgrims from all parts of the country crowded as closely as possible from early morn to sunset; the water within this space during the whole time was thick and dirty,—partly from the ashes of the dead, brought by surviving relatives to be deposited in the water of their river god, and partly from the washing of the clothes and bodies of the bathers. Now, pilgrims at the bathing-ghant, after entering the stream, dip themselves under the water three times or more, and then drink of the holy water, while saying their prayer. The drinking of the water is never omitted; and when two or more members of a family bathe together, each from his own hand gives to the other water to drink. On the evening of the next day, the 13th of April, eight cases of cholera were admitted into one of the hospitals at Hurdwar. By the 15th, the whole of this vast concourse of pilgrims had dispersed, carrying the cholera in every direction over India; it attacked the British troops along the various routes, it passed the northern frontier, got into Persia, and so on into Europe, where it will work its wicked will for some time to come."

These facts expose the fallacy of planetary-pestilence theories so thoroughly that we do not need to adduce any further arguments. We should have considered the subject almost unworthy of notice were it not for the fact that considerable attention has recently been given to it by several popular newspapers which have published sensational articles tending to propagate the theory, without attempting any exposure of the fallacy.

Among the predisposing causes of cholera may be mentioned dissipated habits, the use of alcoholic drinks, unwholesome measures of diet, and anything which has a tendency to lower the vitality of the system. The use of cathartics is also to be deprecated when a cholera epidemic is prevailing. Mental depression is also a predisposing cause. It has been asserted that in cholera times thousands of persons die from simple fear of the disease, without having received into their system a single cholera germ; and it cannot be doubted that many who might otherwise escape harm are made unusually susceptible to the disease by excessive fear and dread.

Treatment.—The most important measures of treatment are of a preventive character, since it is generally acknowledged that severe cases are not likely to recover under any form of treatment. Preventive measures consist, first, in careful avoidance of all predisposing causes of the disease; second, in careful avoidance of all specific causes. The latter measure can be carried out only by the most rigorous quarantine, all communication being cut off by unaffected localities with those in which the disease is prevailing. The bowel discharges from patients suffering with the epidemic, instead of being emptied into cesspools or sewers, should be at once rendered harmless by disinfection. The best plan is to place in the vessel which is to receive the discharges a tea-cupful of disinfecting solution, consisting of one-half ounce of permanganate of potash or soda, and an ounce of copperas, to each pint of water. No water should be employed for drinking purposes that has not been boiled and filtered. Upon the appearance of the first symptom, looseness of the bowels, warm baths, hot enemata, and fomentations to the bowels should be administered. The food should be little in amount, and of the most simple character. It should consist chiefly of fruits and grains. Meat should be avoided. If the symptoms increase, fomentations should be used more assiduously. The patient should be allowed to drink all the cold water he desires, but it should be given in small quantities at a time. Ice pellets of the size of a large bean or filbert are swallowed by patients with great avidity.

In extreme cases, where the skin becomes very cold, it should be rubbed vigorously with dry, warm flannels, and when necessary, with mustard water. Hot bricks should be applied, and the fomentations should be continued with increased vigor. If the patient comes to convalescence, great care should be exercised to prevent relapse from improper diet. The food must be of the simplest character for several weeks. No meat should be allowed until the activity of the stomach is fully restored. There have been hundreds of remedies advertised for this disease, but experience has shown the value of those mentioned. The hygienic treatment of cholera is undoubtedly the best of any which can be adopted. Everything depends upon the application of energetic measures of treatment at the very first appearance of the disease.

WHOOPING-COUGH—CHIN COUGH—PERTUSSIS.

SYMPTOMS.—Slight fever for eight or ten days, followed, sometimes accompanied, by violent paroxysms of coughing; coryza; hot, dry skin; restlessness; as fever subsides, cough acquires a peculiar shrill sound or whoop; expectoration of tough, viscid mucus; paroxysms of coughing often accompanied by vomiting; from three or four to six or eight times as many severe paroxysms occur each day.

This disease is contagious, remaining latent about six days. The same person is rarely affected more than once. At its beginning, it is generally mistaken for an ordinary cold; the mistake is discovered, however, when the cough assumes its peculiar character. The cough is often preceded by a sensation of tickling in the throat. After a paroxysm, the patient is much exhausted, but in mild cases soon goes about as lively as ever. The cough is provoked by inhalation of cold air, laughing, crying, swallowing, and various other causes. The great cause of the cough, however, is the accumulation of tough, tenacious mucus in the throat. This stage of the disease may last only three or four weeks, or as many months. Finally, the tenacious mucus gives place to that which is thinner, less tenacious, and more easily expectorated. The cough is less severe and frequent, and the patient is beginning to recover, but the tendency to relapse is very great. With good care and proper treatment, the disease should not last more than four or six weeks. The results of the disease are sometimes quite serious. The violent coughing may give rise to hernia or rupture. Collapse of some portions of the lungs, and also emphysema or dilatation of the air-cells is another not infrequent result. This is the cause of the permanent shortness of breath in some cases. Whooping-cough may also lead to consumption. In many cases, an irritability of the mucous membrane is left, which occasions a cough much resembling the peculiar cough characteristic of the disease whenever the person takes a little cold. The disease rarely affects adults, and is seldom fatal.

Treatment.—Avoid exposure to the exciting cause. Give special attention even to the slightest cold when the disease prevails, as a cold predisposes to the disease as does a diarrhea to cholera in cholera times. The testimony of the most eminent physicians is that there is no specific for whooping-cough. The eminent Niemeyer declares that "we cannot ever ascribe any special curative influence to belladonna, a drug which has acquired great reputation. . . . . On the other hand, we attach great value to well-managed treatment by sweating."

The disease must be treated like any other severe catarrh. The patient must be taken away from the source of infection with the disease when possible, as continued exposure to the cause will aggravate it very greatly. He should also be kept at as uniform a temperature as possible; and the temperature should be sufficiently warm to keep the skin in an active condition. Care should be taken to give the patient abundance of fresh air, but without exposure to drafts. In summer he may be out of doors during the middle of the day, but must not be exposed to the coolness of the morning and the evening. He should wear warm woolen clothing, particularly about the chest, and should have the neck protected by a thick flannel bandage. Once a day, if the patient is strong, he may take, with advantage, a warm blanket pack. The vapor bath, and vapor inhalations are also remedies of great value in this malady. Fomentations and compresses to the chest are of great value in children old enough to take them readily. The child must be taught to restrain the cough as much as possible. After the mucus is expelled from the throat by coughing, there is no more occasion for cough, and it may be controlled by an effort of the will. An eminent German lady, who had had much experience with the disease, declared that "whooping cough was only curable by the rod." The child must be told to stop coughing, and if necessary, compelled to resist the cough, as this is one of the most effectual means of cutting short the disease. The cough itself aggravates it, and the more it is restrained the less will be the disposition to cough. Very little, if any, medicine is needed. Simple soda water is one of the most useful remedies. It should be taken just before the paroxysm. The following is equally good used in the same way: Saleratus, half a teaspoonful, water, a large teacupful; sweeten with sugar, and flavor with cinnamon or winter-green if necessary. This will shorten the attacks of coughing by facilitating the expectoration of the tough mucus; "it loosens the cough." The common use of narcotics in this disease, especially in children, is to be condemned, since they are "apt to cause hyperæmia of the brain." If used at all, their employment should be restricted, to use the words of an eminent German author, "to those cases in which danger from the disease outweighs danger from the remedy." When the amount of mucus is so great as to threaten death by obstruction, it may be necessary to cause vomiting for the purpose of relieving the lungs of the accumulated mucus. This should be avoided until absolutely necessary, and the mildest means possible should be used for the purpose.

DIPHTHERIA.

SYMPTOMS.—CATARRHAL FORM: *Slight fever; malaise; dryness in throat, with slight pain on swallowing; glands of throat swollen; mucous membrane red; small grayish-white or whitish-yellow spots; frequent nausea and vomiting.*

CROUPOUS FORM: *Symptoms of catarrhal form intensified; more fever; head hot; mind confused; much pain in throat; one or more whitish patches in throat; peculiar offensive odor of breath; tongue coated.*

MALIGNANT FORM: *Foregoing symptoms, with extreme prostration; pulse weak and slow; face sodden; neck swollen and shiny; breath very offensive; false membrane very extensive.*

This disease is of so great practical interest on account of its great and increasing prevalence at the present time that we shall be justified in devoting more space to it than to most of the other affections considered in this volume. In the following account of the disease, its history, causes, and treatment, we have drawn liberally from our popular monograph on the subject, written in 1878 * :—

Fig. 887.

The disease is by no means a modern one, as is generally supposed. Homer and Hippocrates, who wrote several centuries before the Christian era, were each familiar with this disease under the name of *Malum Ægyptiacum*. As the ancient name indicates, the disease was by early writers supposed to originate in Egypt and Syria. An epidemic of diphtheria occurred in Rome A. D. 380. Holland was visited by the disease in 1557. Many other parts of Europe

* Diphtheria: Its Nature, Cause, Prevention, and Treatment." Good Health Pub. Co., Battle Creek, Mich.

suffered from its ravages in the two last centuries. The first recorded occurrence of this affection on the American continent was in 1771, described by Samuel Bard in 1786. In 1856 another very severe epidemic visited this country, since which time it has been very common, seemingly increasing in virulence from year to year, sometimes abating its ravages for a single season, then breaking out with redoubled fury and fatality the next.

The characteristic feature of the disease when fully developed is a peculiar membranous formation which makes its appearance usually upon the fauces or tonsils, and is called *diphtheritic membrane*, from its resemblance to skin, which is the signification of the Greek word from which the name is derived.

This membrane, or rather false membrane, when first formed, is of a grayish-white color; very tough, of leathery consistency, and adheres to the mucous membrane beneath it with great tenacity, it being very difficult to tear away except in shreds, and then only by laceration of the mucous membrane, leaving a bleeding surface. The false membrane, in fact, is not formed upon the mucous membrane or other tissue where it may occur, but in it. At least it sends down numerous rootlets which are imbedded between the cells of the tissue beneath. In this respect the membrane is very different from that formed in croup, which often separates from the mucous membrane upon which it is formed, leaving the tissues entirely uninjured.

The membrane is not confined to the fauces. It may occur on any portion of the structures of the mouth, the inside of the cheeks, the gums, the tongue, the edges of the lips, as well as on the tonsils, the uvula, the soft palate, and the pharynx generally. It may also occur in the nasal cavity, either primarily or secondarily, extending upward from the fauces.

We recently treated a case in which the whole back portion of the mouth was covered with the diphtheritic membrane, which also extended throughout the nasal cavity, and even appeared at the edges of the nostrils. The exudation may also occur at any other parts of the body where there is a union between skin and mucous membrane. Even the stomach and intestines sometimes become the seat of a diphtheritic membrane.

The exact nature of this membrane has been the subject of much experimental inquiry. Besides being subjected to a most careful microscopical inquiry by hundreds of skilled microscopists in the Old

World as well as the New, eager pathologists have submitted it to the test of physiological analysis by applying it in various ways to lower animals. The results of these inquiries have seemed to establish the following facts:—

1. The active cause of the characteristic features of diphtheria are vegetable organisms.

2. The false membrane is formed by the growth of these vegetable parasites in and upon the infected mucous membrane, and the vital resistance of the tissues to the depredations of the organisms.

These conclusions are disputed by physicians of eminence, while warmly defended by Oertel, and others, and cannot be said to be absolutely proven; but since the most successful mode of treating the disease is that which is based upon this theory of its nature, it is a perfectly safe and practical one for us to adopt.

Exciting Causes.—The minute organisms peculiar to this disease act as the immediate exciting cause in all cases. These germs find ready access to the throat and nasal cavity, the parts most readily affected by the disease, being taken in by the act of respiration. The particular germs which are thought to be characteristic of this disease are more or less common in the air, especially in proximity to decomposing matter. It is their enormous numbers and extraordinary activity which give to diphtheria its dangerous character. In Fig. 338 may be seen a representation of the microscopical appearance of the *Bacterium Termo* and the *Micrococcus*, the two varieties of germs thought to have most to do with the production of diphtheria.

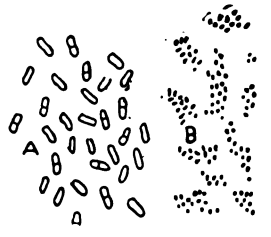


Fig. 338. Parasitic Fungi of Diphtheria. A, Micrococcus; B, Bacteria Termo.

Since the disease is probably caused by germs, and since these very germs are produced in great abundance in the body of a person suffering with the disease, and thrown off with the breath and other excretions, it is evident that it may be communicated from one person to another. Clinical experience has verified this fact innumerable times. Experiments upon animals have also shown that the disease is communicable by inoculation. The affection is very appropriately called by one author a "miasmatic, contagious disease." On no other hypothesis can observed facts be reconciled. The disease is now gen-

erally recognized as contagious, and is treated as such by all enlightened physicians. The certain knowledge of this fact is sufficiently useful to well repay all the labor and time which have been devoted to the investigation of this malady. The period of incubation is usually two to eight days.

We believe that diphtheria may very appropriately be included in the class of diseases latterly known as filth diseases, since the parasitic organisms by which it is probably caused are apparently identical with those which flourish in organic filth. There can be no doubt that in decomposing, putrefying organic matter the germs of this disease are produced. One great source of such poisonous matters may load the air of a whole village with the poisonous germs, and thus expose to its ravages a whole community at once.

Neglected cesspools, foul vaults, leaky sewers, damp, unventilated cellars, moldy walls, all these and every other source of organic decay are the favorite haunts of these destructive organisms; and the only wonder is that cases of profound poisoning by these parasitic pests are not more common than they are. It is a mystery that so many escape.

What are termed spontaneous cases of the disease, that is, those which originated without previous exposure to contagion from a person suffering from this affection, are not uncommon. These cases undoubtedly originate from the production of germs by the usual sources of disease germs, which have already been indicated with sufficient definiteness. There are some who maintain that the spontaneous origin of the disease is impossible; but so many cases have appeared in which no connection could be traced to a preceding case that it seems to us to be pretty clearly established that it is possible for the disease to arise otherwise than by contagion. A few months since, a lady from an Eastern State came under our care for treatment of the effects of diphtheria, a very severe attack of which she had suffered. Upon inquiring into the history of the case we found it impossible to trace the disease to any other cause than exposure to the germs and spores of lower vegetable organisms. The house in which she was stopping was exceedingly damp, the walls, and even the door and window-casings being stained with green and brown mold. In personal conversation with Dr. Snow, of Providence, Dr. E. L. Griffin, President of the State Board of Health of Wisconsin, Dr. Ezra M.

A few other means of contagion which we do not remember having seen mentioned are perhaps worthy of attention in a practical treatise like this. The disease may unquestionably be spread very rapidly by the use of a common drinking-cup at school or elsewhere. One of the worst cases of diphtheria we ever saw was in a little child who had taken the disease from a workman employed on the premises, by sipping water from the man's drinking-cup. The man suffered but slightly; but the little boy narrowly escaped without serious injury after a very severe illness, with extensive production of the false membrane. Toys and even books may also become the medium for communicating the disease, as well as articles of clothing, and anything that may become infected by the breath or expectorations of the patient.

Predisposing Causes.—Anything which impairs the vital functions will predispose to an attack of any febrile or other disease. We do not purpose to mention here all the numerous causes of impaired vitality, but only some of those especially active in rendering the system liable to the disease under consideration.

"Taking cold" is a process very difficult to describe exactly, but is so common an occurrence that the phrase is significant to every one. In general, when a person has taken a cold there is more or less congestion and irritation, if not actual inflammation, of the mucous membrane of the pharynx, and often of the nasal cavity also. There is also usually present an increased secretion of these parts, and a tumid condition of the mucous membrane. This condition is particularly favorable, not only to the lodgment and development of the diphtheria germs, but to the development of the accompanying inflammation.

Chronic inflammation, or catarrh of the pharynx, as well as nasal catarrh, is also a powerfully predisposing cause of diphtheritic inflammation of those parts. When the mucous membrane is already affected by an inflammatory process, the presence of the diphtheria organisms is all that is required to convert the morbid process into a diphtheritic inflammation. Consequently, those who are thus suffering should be exceedingly careful to avoid any sort of exposure to infection from the disease. Persons who have been subject to pharyngeal catarrh find the difficulty increased after an attack of diphtheria.

Insanitary conditions, by impairing the vital forces, and thus diminishing the vital resistance of the tissues, will produce a strong

predisposition to diphtheria. As already shown, all sources of decay may be sources of diphtheria poisoning, so that insanitary conditions are both directly and indirectly productive of this dangerous malady. This fact is well worthy of repeated emphasis when the larynx becomes affected, while adults may suffer the same amount of infection and invasion of the throat and larynx without any serious interruption of respiration. This is one cause for the greater fatality of the disease in children.

The disease is often more prevalent in the cooler seasons of the year than in the summer, but probably this fact is wholly due to the increase of predisposing influences of other sorts at those times, as increased frequency of colds and nasal and pharyngeal catarrhs; less free circulation of air in dwelling-houses greatly increasing the virulence of the poison wherever it may chance to be at work, and similar incidental causes. The disease has been known, in many instances, to extend its ravages in certain localities as widely and as fatally during the heat of summer as at any other season of the year.

The observations compiled by Dr. H. B. Baker, Secretary of the State Board of Health of Michigan, show an increase in the frequency of the disease during July and August. This may be due to the fact that the great heat of those months encourages decomposition and the generation of germs in unusual abundance.

Certain diseases, as whooping-cough, typhoid fever, and scarlatina, are liable to be followed by diphtheria, which is then known as secondary diphtheria. Children under ten years of age show a marked susceptibility to this disease. Between the ages of two and four years the susceptibility is greatest. Children under one year of age are not likely to have the disease. Very young children seem to be almost wholly protected against it by their infancy. Children are not only the most liable to take the disease, but they are likely to suffer the most severely. Adults, except in cases of extreme old age, suffer much less from the most serious results of the disease on account of greater size of the larynx. In children the larynx is so small that suffocation is imminent.

A mild or catarrhal form of the disease is very likely to be overlooked, or regarded as only an ordinary sore throat, even by physicians. Some physicians contend that the catarrhal form of diphtheria does not exist. We would call especial attention to the fact that epidemics of diphtheria are always accompanied and followed by numerous

cases of sore throat, tonsilitis, etc. Dr. Arthur Downs, in an able article in the American Medical Bi-Weekly, takes the position that these affections at such times are "essentially identical with undoubted diphtheria." The reasons he gives for thus thinking are as follows:—

"1. These sore throats prevail correlatively with the unquestioned cases of diphtheria. 2. Under favorable conditions they may communicate the typical form of the disease. 3. The latter, also, in its turn, gives rise to these apparently trivial sore throats." Dr. Downs adds: "I can only repeat my conviction that, if the public generally, and medical men in particular, dropping the misleading name derived from a variable pathological appearance, would regard these concomitant 'sore throats' as essentially 'diphtheritic,' a great point would be gained toward the isolation so necessary, but at present so difficult to obtain. It is to this end that Dr. Thursfield, whose experience is second to none, strenuously urges the disuse of the modern term 'diphtheria,' and the resumption of the old name 'contagious cynanche.'"

Paralysis and Other After Results.—Secondary affections of various sorts may follow any form of diphtheritic disease. The most common of these is paralysis. Paralysis of the soft palate and pharynx is the most frequent; but the disease may involve any part or the whole of the muscular system. This affection usually comes on after the local disease is cured, even as late as the fifth or sixth week. It usually appears in the second or third week, beginning so insidiously as to be scarcely noticeable, and gradually increasing until fully developed. The soft palate is first affected. The uvula hangs down, making it impossible to give the open sound of the vowel *a*. If the paralysis is of one side only, the uvula will be drawn over toward the healthy side. The patient finds difficulty in articulation, in swallowing, and in expectoration. The speech is thin and nasal. The sounds of syllables run into each other, being sometimes almost unintelligible. The patient will sometimes complain of liquids getting into the nasal cavity in drinking.

Paralysis of the muscles of the upper and lower extremities, of the larynx, of the face, the eye, the neck, trunk, and diaphragm, and of other parts also, occurs in many instances, especially in the more severe cases, appearing a week or two after convalescence begins.

An important fact to be recollected is that one attack of diphtheria is no protection against subsequent attacks. Indeed, a person who

has had diphtheria is often more susceptible to the poison, and more liable to infection than if he had not suffered from the disease, on account of the chronic inflammation of the throat which frequently follows the disease.

Treatment.—The treatment of this disease has not usually been very satisfactory. The history of the various epidemics recorded shows a mortality of one in every two and one-half cases, or forty per cent in severe cases. In some epidemics, a rate of mortality as high as sixty and even seventy-five per cent has been reached. This makes the disease even more to be dreaded than small-pox or cholera. Even yellow fever scarcely exceeds it in fatality.

Notwithstanding the discouraging outlook for the treatment of this disease, there is reason to hope that the adoption of improved methods of treatment may greatly lessen its present fatality. Constant improvements are being made in the treatment of this as well as other diseases; and it is to be hoped that in the near future its terrible ravages will be stayed by a better application of remedies in its management. The plan of treatment which we shall recommend is based on practical experience in a large number of cases. To our personal knowledge it has been employed in a very large number of cases with remarkable success, no death occurring when the treatment was applied soon after the onset of the disease, and perseveringly employed. We have ourselves observed its efficiency in the treatment of fully one hundred cases, and have never seen a patient lost which was thus treated. Yet it is not claimed that this or any other plan is a specific. We expect sometime to meet with a fatal case, since no method of treatment can be infallible; but we are thoroughly convinced that a great improvement can be made on the ordinary mode of treating this disease.

Local Treatment.—As already observed, diphtheria is primarily a local disease. This being the case, its local treatment becomes a matter of the greatest consequence. Indeed, this portion of the treatment should receive first attention. This fact has been long recognized by one class of physicians, those who have believed the disease to be essentially local in character; and a great variety of remedies have been employed. Prominent among these has been the application of caustics of various sorts to the throat. Nitrate of silver, nitric acid, hydrochloric acid, iodine, caustic potash, pure carbolic acid, and va-

rious other caustics have been thus employed, but none so frequently or so extensively as the first named.

After dwelling at some length upon the evil results of cauterization, Oertel remarks as follows:—

"There can be no doubt, then, that the unfavorable results which have been obtained on all sides by cauterizations, more or less energetically practiced, must put a stop to this procedure, even if, in its stead, we should be obliged to resort to its opposite, the purely expectant and symptomatic treatment." *

Another author, eminent both as a teacher and as a practitioner of medicine, says:—

"A large proportion, if not the great majority, of the practitioners of this country have been led to discontinue the causterizing and irritating topical applications which have been heretofore in vogue." †

"The use of a solution of nitrate of silver, and even of the solid stick, at one time met with considerable support, . . . but it is being gradually abandoned by those who have had experience of recent epidemics. . . . In fact, the profession has given up the use of caustics altogether, being convinced that they rather aggravate than check the local process." ‡

Numerous other equally eminent names might be cited as opposed to the use of caustics in this malady, among whom are Profs. Janeway and Lusk, of Bellevue Hospital Medical College, New York. We have dwelt thus lengthily upon the subject of caustic treatment because this obsolete practice is still held to by physicians who have not had a large experience in the treatment of this disease, or who have become too thoroughly fossilized to be able to modify their ideas in accordance with the most advanced information on this subject.

Disinfectants.—All agents which are destructive to germs when used in a form which will not destroy the living tissues, are useful as local applications; but the best preparations are solutions of chlorine, or of some of its compounds, permanganate of potash, and carbolic acid. Strong alcohol has proven very effective in many cases. These solutions must be used thoroughly and often as gargles. At least twice an hour the throat and mouth must be well rinsed. If the patient is too young to gargle well, or if the posterior part of the pharynx is

* "Ziemssen's Cyclopedia of Medicine," vol. i. p. 673.

† "Practice of Medicine," by Austin Flint.

‡ "Diphtheria; Its Nature and Treatment."—Mackenzie.

affected, the disinfecting lotion must be applied with a swab, syringe, or an atomizer. A swab can be easily made by tying a small soft sponge or a strip of muslin to the end of a small stick or a lead pencil. In case the nasal cavity is invaded, the solution must be passed through the nose by a syringe. The following directions for the preparation of solutions which we have found to give exceedingly satisfactory results, may be useful to the unprofessional reader:—

Chlorine Solutions. (a) One part of a freshly prepared solution of chlorine gas, or chlorinated soda, in three to five parts of pure water, according to the strength of the solution and the sensibility of the affected parts. Keep tightly corked, and wrap the bottle with a dark cloth or paper.

(b) In a pint bottle place a teaspoonful of chlorate of potash. Drop in a half-teaspoonful of muriatic acid, cork the bottle quickly, and shake it gently in such a way as to bring the acid well in contact with the crystals. A greenish-yellow gas will appear in the bottle. After allowing the bottle to remain closed for ten or fifteen minutes, remove the stopper and pour in quickly half a teacupful of water. Stopper the bottle again immediately, and shake four or five minutes. Repeat the process until the bottle is two-thirds full. Use as strong as patient can bear without causing irritation of the mucous membrane.

(c) Dissolve in a half pint of equal quantities of vinegar and water two heaping teaspoonfuls of common salt. Use very freely.

Permanganate of Potash, one of the most useful of all disinfectants, is a good remedy in this disease. Dissolve in a pint of pure water, in a glass vessel, one-half dram of permanganate of potash or soda. Use of full strength or with an equal quantity of water. This solution will stain clothing upon which it happens to fall, as well as the skin. The stains are easily removed, however, by a weak solution of oxalic acid.

Carbolic Acid. In a solution of one part of glycerine to three of water, dissolve pure carbolic acid in proportion of three to five drops to the ounce. We sometimes employ equal quantities of water and wine instead of the glycerine solution. To some patients the odor of carbolic acid is very disagreeable. For such, a solution containing double the quantity of the oil of thyme may be tried.

If these solutions are carefully prepared and faithfully used from the outset of the disease, the results will be exceedingly satisfactory.

They can be obtained of any druggist, and most of them can be readily prepared at home if the materials are at hand. It is important that every family should have the materials for at least one or two of the preparations constantly on hand in readiness for use without delay when occasion may require.

There is no known means by which the growth and development of germs may be more efficiently checked than by the use of cold applications which should be made to the throat externally, and the patient should be allowed to hold small bits of ice in the mouth and to swallow them occasionally. The cold applications must be made thoroughly enough to reduce the temperature of the throat as near the freezing point as the patient can endure without suffering, as otherwise it will do almost nothing toward modifying the morbid process. The best mode of accomplishing this is to apply to the throat compresses composed of several folds of linen or cotton—flannel may be used when necessary—between the folds of which are placed numerous small bits of ice, or small quantities of snow. The intensity of the cold may be regulated by the quantity of ice or snow used. When the patient cannot bear so great a degree of cold, compresses may be applied wrung out of cold or iced water. The compress must be large enough to cover the throat and extend well around the sides of the neck.

To guard against too prolonged lowering of the temperature and circulation of the part affected, and to relieve pain, once an hour or two the cold compress should be removed and the throat fomented for ten or fifteen minutes.

To alleviate the suffering, and the difficulty in breathing and swallowing, and to facilitate the removal of the false membrane, no single remedy is so efficient as the inhalation of hot vapor. It is not necessary that the vapor should be medicated, although chlorine, carbolic acid, or vinegar may be added with benefit. The important thing is that the vapor should be as hot as can be borne by the patient without discomfort. A temperature of 110° to 120° will be borne without difficulty by most patients. This remedy soon affords the patient so much relief that even little children manifest a very great appreciation of it. The inhalation should be practiced once or twice an hour at first, and ten to fifteen minutes at a time. The warm vapor acts like a poultice in relieving the swelling, soreness, and spasm, and in facilitating the separation of the false membrane. In cases of croup-

ous diphtheria, especially when the larynx is involved, this remedy is almost the sole reliance for saving the patient's life.

Different modes of applying this remedy have been suggested. It is of the greatest importance that it be done thoroughly. A very good plan is to attach a rubber tube to the nose of the tea-kettle. A tin tube can be readily made by a tinner if rubber cannot be obtained. As the steam is generating, let the patient hold one end of the tube to his mouth and inhale the warm vapor as freely as he can.

Another very good plan is this: Place in an ordinary tea-pot a few good sized pieces of freshly burned lime. Pour on the lime a boiling hot mixture of vinegar and water. Close down the cover, and let the patient breathe the vapor through the nose. The lime and solu ion can be renewed as the quantity of vapor diminishes. This is a very good plan, if well carried out. The best of all arrangements for this object is an apparatus constructed for the purpose, a representation of which may be seen in Fig. 274. Every family ought to have an apparatus of this sort ready for use.

No attempts should ever be made at the forcible removal of the membrane. If it is torn off, the mucous membrane is left sore and often raw, or bare. When removed thus, another membrane is sure to form.

The removal of the membranes may be effected by the inhalation of solutions of substances which have the power to dissolve them chemically. A moderately strong solution of lime-water, or of vinegar, answers well for the purpose. An atomizing apparatus is required. In cases of diphtheria of the larynx, this is a very important measure indeed, and must be used very thoroughly.

When the membrane has ceased to form, hot fomentations should be assiduously applied to the throat in addition to the inhalation of warm vapor, which should be continuous at least fifteen minutes in each half hour.

The administration of a light emetic is often advantageous in effecting the dislodgment and expectoration of the membranes in cases in which the larynx is affected. A copious draught of lukewarm water is usually sufficient for the purpose; but if emesis does not follow its repeated use, a small dose of sirup of ipecac or a teaspoonful of powdered alum or ground mustard, or some other simple emetic, followed by warm-water drinking, will be sure to induce vomiting.

When the nasal cavity is obstructed by false membranes, thorough syringing should be resorted to, the solution consisting either of equal parts of good vinegar and warm water, or a solution of lime, five grains of freshly burned lime to the ounce of water. The syringing should be continued fifteen or twenty minutes at a time, and renewed at brief intervals until the membrane is softened and comes away in pieces. The face of the patient can be protected during the syringing so that the skin will be in no way unpleasantly affected. Usually very great relief may be given the patient by this measure.

Deodorants, such as ozone, and other non-offensive agents, may be employed to great advantage with appropriate apparatus, for the purpose of purifying the air of the sick-room. Chloride of lime, carbolic acid, and sulphuric acid are too offensive and annoying to the patient to be used in this way with benefit. Probably no agent is so useful for this purpose as ozone, one of the most powerful disinfectants known. Ozone may be generated by any one of the means described on page, 803.

General Treatment.—For subduing the fever no remedy equals water in antiphlogistic effects. In general, the febrile action accompanying diphtheria does not rise so high as in most other febrile diseases; yet this symptom is one of no small importance. The same means should be employed as elsewhere directed for fever, page 1182.

Care must be taken continually in the use of water in this disease, that the patient has no tendency toward collapse. If the pulse begins to flag, is slow and feeble, while the skin is cool, no cooling applications are necessary. Warm applications are needed.

Care should be exercised that the limbs are kept warm. Cool compresses may be applied to the head, even the ice-cap when necessary.

At the outset of the disease, when the patient often complains of chilly sensations, a warm blanket pack, given by wringing a woolen sheet out of water a little above blood heat, and wrapping it snugly about the patient, will be found a very excellent remedy, not only for the chilliness, but also for the muscular soreness, which is also a frequent symptom of the onset of the disease.

Diarrhea, vomiting, and the other minor symptoms which often accompany this disease, are to be met by the usual remedies. For troublesome nosebleed, which not infrequently occurs when the nasal

cavity is affected, the nasal douche, employing a hot solution of chlorate of potash is the best remedy.

For sustaining the patient, too great reliance is put by many upon the large use of iron and frequent feeding. We have never seen sufficient evidence of the utility of these methods to convince us of their efficiency. Others use stimulants in great quantities, which we believe to be productive of more harm than good. What the patient needs is nutrition, not stimulation. If overcrowded with food, and plied with aliment at too frequent intervals, the nutritive apparatus will have no time for the elaboration of food, and no time for rest. It will be always engaged in the preliminary work of digestion. The overworked stomach will be sure to fail up with indigestion, and the patient will really receive a much smaller amount of available nutrition than if food is taken in proper quantities at intervals sufficiently far apart to allow time for digestion.

Give the patient three meals a day at regular hours. Let the diet consist principally of oatmeal or barley gruel, with fruit and milk toast. If there is difficulty in swallowing solid food, let the patient have plenty of milk, beef soup or broth, at intervals of three to five hours.

If the patient falls into a state of collapse, the pulse being slow and weak, the skin cool, the respirations rapid, with the other usual symptoms of that condition, the temporary use of stimulants may be useful. We have used electricity, both the galvanic and the faradic, in such conditions with excellent results. Dry heat is also a useful stimulant in such cases. All may be used in conjunction.

Paralysis, and the other secondary affections which often follow this disease, should be treated on the general principles governing the treatment of those affections from whatever cause. In the case of paralysis, after the disease is fully developed, electricity should be employed. This, with out-of-door exercise and time, will effect a cure in most cases. Tracheotomy is a surgical operation sometimes performed when the symptoms indicate imminent danger of suffocation; but before it is resorted to, the condition of the patient is already so hopeless that recovery rarely occurs.

GLANDERS—FARCY.

SYMPTOMS.—High fever; chilliness; severe headache; pain in the muscles and joints; dark colored urine; profuse sweating; discharge from the nose, at first watery, then profuse, viscid, and finally greenish; eruption of the face, known as "farcy-buds," which become ulcers.

This disease is generally contracted from horses. Both the mucous membrane and the skin are affected. The term glanders is applied to the disease when it affects the mucous membrane, and farcy when it affects chiefly the skin. Red, warty growths affect the skin when it makes its appearance, which are known as farcy-buds. In horses the disease frequently affects the lungs, when it very closely imitates what is termed "heaves," the horse having a short, smothered cough, and being troubled with shortness of breath. Great care should be exercised to avoid exposure and contamination with the discharge from the nostrils of horses, whether they are known to have glanders or not. Horses that are discovered to be subject to the disease should be at once destroyed, and everything which has been used about them should be thoroughly disinfected by the burning of sulphur. The stalls, manger, harness, blanket, and everything employed about them should be thus treated.

After the system has once become thoroughly infected with this disease there is no known means by which a cure can be effected, though much can be done to palliate the patient's condition and prolong his life. Great care should of course be taken to prevent communication of the disease to others.

When a person in handling a horse suffering with glanders gets any of the matter into a crack of the skin or upon the raw surface, the same measures should be taken as have been recommended for the bite of a mad dog; that is, the parts should be cut out or cauterized, or measures should be employed.

When the disease first makes its appearance in the nose, the nasal cavity should be washed out twice a day by means of the nasal douche, with a solution of chlorate of zinc in the proportion of two to six grains to the ounce of water.

VARICELLA—CHICKEN-POX—WIND-POX.

SYMPTOMS.—Eruption; slight fever; restlessness; some itching of the skin.

This is a very mild disease. It generally occurs in epidemics, and is believed to be slightly contagious, being communicated, as is thought,

by the breath. The first symptoms of the disease generally make their appearance about two weeks after exposure.

The first symptom, and indeed the most prominent symptom of the disease, is the eruption, which consists first of roundish or irregular and slightly raised spots, being in size from that of a pin-head to a pea. In the center of these spots are little vesicles which are filled with a colored, watery fluid. The vesicles are generally very few in number, and never have the center depressed as in small-pox. When scratched, the eruption appears in successive crops during the first two or three days. By the sixth day, the vesicles become dry and covered with small brownish scabs. The disease is distinguished from both measles and small-pox, for which it may be mistaken, by the fact that the eruption either precedes or occurs at the same time with the beginning of the fever.

Treatment.—As the disease is never fatal, the most that is required is to keep the patient quiet, and if the fever is quite high, to cool the body by tepid sponging, or compresses applied to the bowels, changed as frequently as necessary. The patient should take a very light diet for a few days.

MEASLES.

SYMPTOMS.—FIRST STAGE: *Chilliness, followed by symptoms of catarrh of the upper air-passages; eyes red and tearful; hoarse and dry cough; pain in the head and limbs; disturbance of digestion; nausea, and sometimes vomiting; eyes sensitive to light; sometimes violent sneezing.*

SECOND STAGE: *Increase of fever; in small children, sometimes convulsions; appearance of eruption about the mouth and eyes, which soon extends to the neck, chest, and over the lower part of the body; itching and tingling of the skin.*

THIRD STAGE: *Fever and eruption nearly disappear; spots covered with bran-like scales.*

Measles is an eruptive, contagious disease which may occur at any age, although children are most likely to be affected by it. It generally occurs in epidemics, and is infectious as well as contagious. It begins much like a severe cold or influenza. After two to four days, the eruption appears. and consists of small, slightly elevated, reddish spots. When pressed with the finger, the red coloring disappears, and the spots soon run together, forming irregular clusters which often have a quarter-moon shape. The eruption feels rough to the finger. Occasionally little vesicles or blister-like spots are seen. The disease

reaches its height upon the third day of the eruption. At the end of the fifth or sixth day, the spots become of a yellowish tinge, and there is a marked amelioration in all the symptoms. The catarrh gradually subsides, and by the end of two weeks the patient is generally well. The period of incubation, or time which elapses after exposure before the symptoms of the disease make their appearance, is about one week.

A form of the disease in which the spots are unusually dark, is known as black measles. The disease sometimes assumes a very malignant form. Complications sometimes occur, the most dangerous of which are pneumonia and bronchitis. Inflammation of the eyes is also very common, the eyes sometimes remaining sore for a long time after the patient has recovered from the disease itself. Croup is an occasional and very fatal complication. Inflammation of the bowels sometimes occurs.

Treatment.—When an epidemic of measles is prevailing, great care should be taken to prevent exposure to the disease. This cannot always be done, as the popular dread of the disease is not sufficiently great to induce the entire isolation of persons who are suffering with it. Various experiments have been made which seem to indicate that a degree of protection may be afforded by inoculation with the virus of the disease, as was practiced as a means of protection from small-pox before the discovery of vaccination. Inoculation has never been extensively practiced, however, and is of doubtful propriety.

In mild cases, very little treatment is required except such as is necessary to make the patient comfortable. Good nursing is much more important than medical treatment. If the eruption is slow in making its appearance, or is repelled after having once appeared, the patient should be given a warm blanket pack. The cold pack is most commonly used in Germany, but we have obtained equally good effects from the warm pack, and it is much more comfortable for the patient.

When the fever rises high, it should be subdued by tepid sponging, cool compresses to the abdomen, renewed as frequently as they become warm, and the cold enema. Cold packs and affusions, although in no degree dangerous, and highly recommended by many eminent physicians, are rarely required. Thomas, the eminent author of the article on measles in Ziemssen's Encyclopedia, says in reference to the treat-

ment of this disease, "At present, cool baths, packings, and extensive cold compresses are the usual means employed. The advantages of a judiciously administered cold-water treatment in measles are, that it usually affords to the patient more speedily and safely than any other anti-febrile method, a certain sense of comfort; that it is not apt to weaken or otherwise act unfavorably; and that it shortens convalescence by permitting the patient to expose himself to the fresh air sooner than under any other treatment." Care should be employed in sponging the skin not to aggravate the irritation by rubbing. In drying the patient, the skin should be patted with a soft towel instead of being rubbed.

The old-fashioned plan of keeping the patient smothered beneath heavy blankets, and constantly in a state of perspiration, is wholly unnecessary, besides rendering the patient yery uncomfortable. The irritation of the skin, as well as the sensitiveness to cold, may be much relieved by inunction of the skin two or three times a day with vaseline, sweet oil, fresh butter, or any other good unguent. No fears whatever need be entertained that the eruption will be driven in by cold applications, as there is no danger whatever from the application of cold water to the surface, except in the last stages of the disease, after the eruption has disappeared. No hesitation need be felt in applying compresses and sponging to reduce the fever on account of the cough, as this will generally be found to be the best means for relief. Convulsions require warm baths. Delirium and great restlessness indicate congestion of the brain. A slight diarrhea need give no occasion for alarm. If this symptom becomes very troublesome, a cool enema should be employed two or three times a day. The occurrence of pneumonia indicates the necessity for the employment of such measures as are elsewhere recommended for that disease. If croupy symptoms appear, ice compresses should be applied to the throat. If this does not secure relief, the throat and chest should be lightly sponged with water as hot as can be borne, care being taken not to burn the skin. Hot fomentations are also useful. If severe capillary bronchitis occurs, causing greatly diminished respiration, accompanied by high fever, Ziemssen recommends the use of the cold pack, which he thus describes: "Several thicknesses of cloth wrung out of cold water are laid upon a piece of flannel of sufficient width to protect the bedclothes from becoming wet. The naked patient is then placed upon the sheets and enveloped in them. Lively kicking and scream-

ing ensue, giving depth and force to the previously superficial inspiration. By degrees the child becomes more quiet, and soon falls asleep. The cold wrappings are to be renewed every half-hour or so, until the temperature, pulse, and frequency of respiration are remarkably diminished. This is usually the case in a couple of hours."

This treatment may seem quite heroic, but it is recommended by the highest medical authority in the world. With reference to the old sweating method of treatment, Prof. Thomas, previously quoted, remarks that "although it has been given up by thousands in the treatment of measles, notwithstanding, prejudices are still entertained by many against the use of baths, even warm, on account of the supposed possibility of their exerting an unfavorable influence upon the cough and catarrh of the air-passages in general. It is to be hoped that the favorable results of hydrotherapeutics may overcome this prejudice, and that ventilation and cleanliness may in future epidemics gradually cause pneumonia and the other dangerous complications of measles, and, we think, their mortality, to sink to an unavoidable minimum."

The patient should be allowed cooling drinks, as much as desired. During the disease, a simple, but nutritious diet should be allowed, but stimulants of all kinds should be prohibited. Milk, fruits, and grains may be taken in sufficient quantity to satisfy the patient's appetite, but meat should be prohibited. Good ventilation of the sick-room should be maintained throughout the disease, and care should be taken to prevent, so far as possible, the contraction of the disease by those who have never had it.

After recovery, all the clothing employed about the patient, including bedding, should be thoroughly disinfected. The sick-room should first be disinfected by burning sulphur. It should afterward be thoroughly scrubbed and aired. This is not so important as in some other infectious diseases, but will do no harm, and may be the means of preventing severe illness and death.

GERMAN MEASLES—RUBEOLA.

This disease so closely resembles the preceding that its independent existence is not fully recognized by physicians. Persons not skilled in diagnosis would certainly be unable to distinguish it from measles. It is claimed, however, that an attack of rubeola affords no

protection from measles, and *vice versa.* The treatment and general management of the disease is precisely the same as that of measles, however, and hence we need not give it further attention here.

SCARLATINA—SCARLET FEVER.

SYMPTOMS.—The disease begins with fever, lassitude, and headache; pains in the back; flushed face; coated tongue, nausea, or vomiting; in children, convulsions. On the second day, eruption appears in the form of numerous minute dots of a bright scarlet color, which rapidly run together and soon cover the whole body. At the end of five to nine days, the fever subsides, and the skin begins to peel off.

This is an intensely contagious and infectious malady. Unfortunately, this fact has not been recognized until recently, and is not now as generally known as it should be.

The first symptoms generally make their appearance from four to seven days after exposure. In addition to the symptoms mentioned above, one which is very characteristic pertains to the tongue, which presents what is termed a "strawberry appearance" after the white coating has begun to disappear, occasioned by the enlargement of the papillæ, causing them to project through the white coating.

The edges and tip of the tongue are usually red in all but mild cases of the disease. The throat is more or less affected with inflammation, sometimes at the beginning of the disease, at other times soon afterward. In severe cases, inflammation of the throat is the most serious symptom of the disease. The glands under the jaw become swollen and painful, and thick, tenacious mucus clogs the throat and larynx. The inflammation may often extend into the nose. Occasionally the inflamed glands suppurate. In some instances, the inflammation is so intense that it is rapidly fatal, when it is said to be malignant.

Various complications are apt to occur in this disease, among the most common and serious of which are inflammation of the ears, meningitis, pleurisy, inflammation of the bowels, inflammation of the joints, and acute inflammation of the kidneys, giving rise to dropsy, which is one of the most fatal of all the infectious diseases in very young children. The mortality frequently reaches three-fourths of all who are attacked. The chances of life increase with the age of the patient.

Treatment.—Undoubtedly the great fatality of this disease is in a large degree attributable to improper treatment or in neglecting to employ efficient measures with sufficient promptness. Mild cases require only a simple diet, thorough ventilation, the use of tepid sponge baths, cool compresses to the bowels or wet-sheet packs, and perhaps cool enemas, and other measures which have been recommended for reducing the temperature in fever, together with good nursing. If the eruption is a little slow in making its appearance, or shows a tendency to recede after it has appeared, a warm full bath and sponging of the skin with hot water or hot and cold sponging, together with warm drinks, are the measures to be employed. When the other symptoms are very severe, ice compresses should be applied to the throat if possible, and the patient should be given pieces of ice to hold in the mouth. When the breath is very foul, a solution of chlorate of potash two or three drams to the pint, or permanganate of potash half a teaspoonful to the pint of water, may be used as a gargle. Carbolic acid in the proportion of a dram to a pint of warm water is also an excellent gargle. The other gargles recommended for diphtheria are also indicated in this disease when the inflammation is high, and swelling and irritation of the throat become excessive.

Rheumatic symptoms in the joints require the use of the hot pack or the warm full bath. In a majority of cases the principal danger is from the high temperature. This should be vigorously combated by means of the cold pack, tepid sponging, and other measures already indicated. The popular idea that the eruption "may be driven in" by this method of treatment is a mistaken one. The same remarks made respecting water treatment in measles are equally applicable to this disease. When dropsy occurs from inflammation of the kidneys, the same treatment should be employed as elsewhere recommended for acute nephritis. The patient should be allowed no solid food, and if there are symptoms of suppression of urine, no food at all should be allowed for twelve hours. The patient should be induced to drink as much water as possible, and the skin should be kept in a state of active prespiration by means of warm packs. The use of meat should be strictly prohibited until the symptoms of kidney disease have passed away. If vigorous treatment is employed at the very beginning of the disease, death will rarely occur, notwithstanding the serious character of this affection.

Owing to the gravity of this disease and its infectious and contagious character, the most thorough measures should be taken to secure isolation of the patient during the attack and thorough disinfection of the sick-room. No one should be allowed to see the patient during his illness except the nurses and those who are protected from the disease by having previously suffered from it. At the very beginning of the disease, window curtains, carpets, and all other articles which may afford a hiding-place for the infectious germs, must be removed from the room to be occupied by the patient. All clothes used about the patient should be disinfected by dipping them into a solution of chloride or sulphate of zinc, or should be burned. It is a good plan to keep a tub two-thirds filled with a strong disinfecting solution (see section on "Disinfection") into which cloths soiled by use about the patient may be thrown as soon as used. It should be recollected that the patient is more likely to communicate the disease during the period of desquamation, when the skin is peeling off, than at any other time, as the little particles of dead skin which float in the air about the patient will communicate the disease if inhaled. This danger may be in some degree obviated by giving the patient frequent warm sponge baths during the attack, and during the period of desquamation anointing the skin with vaseline, sweet oil, lard, or some other unguent twice a day.

When the patient has entirely recovered, the sick-room and everything contained in it, or which may have become infected by the contagious disease, should be disinfected by means of disinfecting lotions, and fumigations with burning sulphur or chlorine gas. Sulphur is much more convenient to use than chlorine, and is equally effective. The method of employing it is described on page 579.

ROSE RASH.

This is an eruptive fever which is characterized by a red rash, which differs from the rash of both measles and scarlet fever, although bearing a resemblance to each. The fever runs high and the throat is often very seriously affected. Some cases are followed by dropsy, like scarlatina. It is thought to be a modification of either scarlet fever or measles, but it is not yet fully decided which. It is a mild disease, and rarely fatal. The treatment should be essentially the same as recommended for measles.

CEREBRO-SPINAL MENINGITIS—SPOTTED FEVER.

SYMPTOMS.—A violent chill, or chilliness; fever; great weakness; severe headache; vomiting excited by attempting to sit up; stiffness of the neck; head often drawn backward, and back bent; drowsiness or stupor; great restlessness; face pale or congested, expressive of great suffering; sometimes entire loss of consciousness; delirium; convulsions; skin very sensitive; pain produced by the slightest motion of the limbs; eruption beginning on the face with spots like cold sores, and gradually extending to the whole body; eruption varied, some spots like flea bites, others like prickly heat or nettle stings, still others being simply red patches; bowels irregular.

This disease is infectious and probably also contagious. Much study has been bestowed upon the affection for the purpose of ascertaining its origin. It is supposed by some that the disease is caused by the use of grain affected with ergot. For further information on this point, see page 408. It generally occurs in epidemics, but isolated cases are occasionally met with. During the war it prevailed with great intensity in some parts of this country.

In some epidemics, the disease has a mild course, while in others it is rapidly fatal. The patient is generally taken down very suddenly when feeling as well as usual. Children under fifteen years of age are the most frequent victims, but all ages are subject to the disease. The predisposing causes are poor food, damp, overcrowded, badly ventilated, and filthy dwellings. The disease is often mistaken for typhoid or typhus fever, from which it sometimes can be distinguished only with great difficulty.

Treatment.—This is sometimes a very fatal malady. The mortality in various epidemics has ranged from 30 to 70 per cent. The disease in some cases continues only a few days; in others it may be prolonged for several months, in spite of all treatment. The general fever should be combated by cool compresses and sponge baths. The special indication is for the application of ice by means of ice compresses, or better, ice packs to the head, neck, and spine. This generally relieves the headache and delirium, greatly diminishing, if it does not entirely relieve, the pain and contraction in the neck and back. Some recommend that the head should be shaven in order that it may be more easily and thoroughly cooled. The cold head pour is a very valuable remedy. In case the continuous application of cold to the head produces marked symptoms of depression, as indicated by slowness of the pulse, chilliness, etc., it should be discontinued for a time, or the patient should be placed in a warm blanket pack.

This measure is an excellent means of relieving the tenderness of the flesh and joints. If these measures of treatment are faithfully carried out from the very beginning of the disease, recovery may be looked for in the great majority of cases, and such unpleasant results as inflammation of the ears, resulting in deafness, and blindness from injury to the optic nerves, may be avoided. As remarked before, it is often difficult to distinguish between this disease and typhoid fever at the beginning, and hence it is well to begin active measures as soon as the first symptoms make their appearance, even after the real nature of the disease cannot be made out with certainty, especially when an epidemic of the disease is prevailing. The same precautions to prevent the extension of the disease by thorough disinfection should be observed during and after the attack as have been directed in respect to scarlet fever.

SMALL-POX.

SYMPTOMS.—Chill, or repeated chilliness, followed by fever continuing till eruption appears; intense headache, and pain in the back; vomiting; tongue coated, and no appetite; offensive breath; sometimes scarlet rash on abdomen and inside of thighs; sleeplessness, sometimes delirium; at the end of the second to fourth day, eruption of small red pimples beginning on the face, neck, and wrists, then extending to the trunk and lower extremities; attended by severe burning and itching; mucous membrane of mouth and throat also show the eruption; sore throat; fever, pain in the back and nausea subside when eruption appears; the spots enlarge, and about the eighth day become filled with matter, and center becomes depressed; skin now much swollen; fever rises again; after three or four days the pustules begin to dry, and in two or three days are covered with brown scabs, which gradually loosen; severe itching.

This is one of the most dreaded of all infectious diseases. This is partly owing to the fact that it is one of the most contagious of all diseases of this class. The symptoms generally appear from ten days to two weeks after exposure. The characteristic features of the eruption are at first a shot-like feeling presented to the finger by the small red spots which appear first upon the back, breast, and arms, gradually extending to the whole body. On the second day, the points become enlarged and elevated, forming dark red papules. By the third day, they become still further enlarged and filled with a milky fluid forming vesicles, which continue to enlarge for four or five days longer, becoming conical and as large as a pea. The point of the cone now becomes depressed, so that the vesicle shows a little hollow in the center and is said to be umbilicated. The fluid contained in them becomes thick and yel-

low. This is termed the suppurative stage, which is attended by a return of the fever which generally almost entirely subsides on the appearance of the eruption. Sometimes the vesicles run together, forming large spots, when the disease is said to be confluent. This is the worst form of the disease. After recovery, most patients present a larger or smaller number of slight depressions in the skin known as pock-marks, due to the eruption.

In the mild form of the disease known as varioloid, the fever is much less intense, the eruption generally less profuse, and the vesicles do not matterate or become pustules. In the severe form of the disease pneumonia, bronchitis, dysentery, and hemorrhage, are likely to occur in connection with the second fever, and are frequently the cause of death.

Small-pox has been known as a dreaded disease for more than a thousand years, during which time it has frequently raged with great severity in various countries. During the Middle Ages it must have been very common to have given rise to the proverb current at that time, "From small-pox and love, but few remain free."

Cause.—Small-pox is undoubtedly the result of infection of the system by a specific germ, the origin of which is still wrapped in mystery. Although it is known that the disease has existed for many centuries, it is not known how it originated, or what country is its native home. Experience with the disease has shown that bad food, uncleanly and unhygienic habits, intemperance, dissipation of all sorts, unsanitary conditions, and the crowding together of large numbers of people, greatly facilitate the propagation of the disease and increase its fatality.

During the last two decades of the last century the mortality from this disease constituted one-twelfth of the total mortality in Berlin. During the same century the mortality from small-pox amounted to 30,000 persons annually. During the seventeenth and eighteenth centuries the deaths from this disease in England amounted to one-eleventh of the total mortality. According to the eminent Dr. Curschmann, of Berlin, from whose exhaustive article in Ziemssen's Cyclopedia of Medicine we cull these facts, small-pox came to be dreaded more than the plague. The disease continued its ravages notwithstanding the most earnest efforts of the most eminent physicians to stay its progress. It even penetrated to the jungles of Africa and the wilds of North and South America, where it carried off whole tribes of savages.

Vaccination.—It was early observed that a person who had once had small-pox was not very liable to suffer from it a second time. Ex-

periments made in China and India at a very early period showed that when the disease was induced by inoculation it was much less severe than when contracted in the usual way. This led to the employment in those countries of inoculation as a means of prevention of the disease. The same practice was introduced into Europe. It never became popular, however, from the fact that death not infrequently occurred in consequence of inoculation, and it was found that the disease was as violent when communicated by those suffering from the effects of inoculation as when acquired in the usual way.

In the eighteenth century, the supposed discovery was made in various parts of the world that a disease known as cow-pox was identical with small-pox in human beings. According to Humboldt, this was known to the mountaineers of Mexico for many years before the time of Jenner. In Gloucestershire, England, there was a traditional belief that persons who had acquired cow-pox by milking cows affected with the disease were thereby protected from small-pox. This belief led Jenner to experiment with the virus of cow-pox, and his experiments resulted in the invention of vaccination as a means of protection from small-pox.

The peculiarity of small-pox in lower animals is that its manifestation is chiefly local. In the cow, the pocks or pustules occur almost exclusively upon the udder and teats. In horses the disease is confined to the foot-joints. Sheep, goats, pigs, asses, dogs and monkeys are also subject to this disease.

The evidence is very strong that the so-called small-pox of animals is really the same disease as affects human beings, but the eminent authority quoted freely admits that the facts relied upon "do not absolutely prove it." Experience does seem to show, however, that inoculation with the virus of cow-pox, or with that obtained from the same disease in other animals, will produce a disease supposed to be modified small-pox, which will to some extent exercise the same preventive influence as the real disease itself. On this point the author before mentioned says:—

"In spite of the efforts of its opponents, no unprejudiced person at the present day can any longer be in doubt as to the efficacy and eminent practical value of vaccination. In countries where it has been introduced, and in a measure systematically carried out, the number, the intensity, and the extent of small-pox epidemics have been notably diminished, and in a manner which of itself renders the idea of

mere coincidence inadmissible. In this connection nothing could be more convincing than the exceedingly interesting and graphic account which Kussmaul gives of the mortality from variola, in Sweden, during a period of one hundred years, in the latter half of which vaccination was universally practiced. Moreover, for Germany, France, and England a somewhat similar decrease in the small-pox mortality might be demonstrated. If, notwithstanding all these proofs, we for the moment entertain the supposition, improbable as it is, that this decrease in the epidemics is a matter of mere accident, it at once falls to the ground as soon as we proceed further into detail. We see, first of all, that where vaccination is regularly practiced in very early life, the mortality of children from small-pox, instead of being as enormous as amongst those not vaccinated, is almost *nil*. We notice, further, that where the vaccination of adults, as for example in the Prussian army, is performed with regularity, epidemics of the disease no longer occur. With these facts before us, the idea of mere coincidence is out of the question. The trial of vaccination in the Prussian army has conclusively demonstrated the efficacy of the measure, to test which we have only to compare the relative immunity of soldiers during great epidemics of small-pox with the mortality in classes of the same general age in the civil community where vaccination is imperfectly carried out."

Dr. Alonzo Clarke, professor of the theory and practice of medicine in the College of Physicians and Surgeons in New York City, and one of the most eminent physicians of this country, in a lecture on small-pox reported in the *Medical Record*, remarked as follows:—

"Vaccination has been generally practiced in civilized nations for seventy years; it took it about ten years to acquire general favor, since which time almost everybody has been vaccinated. And the history of the last seventy years gives us a longer duration of human life every succeeding ten years (a less number of deaths in proportion to the number living); and if everybody be vaccinated, and everybody's life be made shorter by vaccination, you observe that this is rather a singular commentary. Every ten years is marked as giving additional length to human life (diminishing the proportions of deaths every year to the number living). I know no other commentary that need be made in regard to it."

The above quotation presents a practical argument which those who oppose vaccination under any and all circumstances will find hard

to meet unless they can show that the statement respecting the length of human life is incorrect.

It is admitted by all who are in any degree conversant with the subject that vaccination is not free from disadvantages and even dangers. Experience shows very clearly that it affords immunity only for a period of eight to twelve years. It is settled beyond question that it may be the means of communicating the worst and most loathsome diseases, when humanized lymph is employed, though this evil may be wholly avoided by the use of bovine virus, or that taken direct from a calf suffering with the disease. It appears to us that in all cases in which vaccination is employed, only the latter kind of virus should be used. We have never known of any injury arising from bovine virus, and think the evidence is very clear that small-pox may be prevented in this way by vaccination.

In some countries, vaccination is made compulsory by law. This has aroused a vigorous opposition on the part of those who are opposed to the practice, and at the present time efforts are being made, especially in England and Scotland, to secure a repeal of the compulsory laws. The anti-vaccinators are not wholly unsustained in their efforts, quite a number of eminent English physicians having taken a stand in opposition to the practice. Quite recently, a petition signed by several hundred physicians was presented to the English parliament, calling for the repeal of the obnoxious laws.

It is probable that the benefits of vaccination on the one hand, and on the other its evils, have been considerably exaggerated. It may be considered as thoroughly settled, however, that vaccination with human virus, that is, with scabs or matter taken from the sore produced in persons by vaccination, should be entirely discarded, and that bovine virus alone, if any, should be employed.

Treatment.—The patient should be kept quiet in bed. Should be given but very little simple, easily digested food. He may be allowed to take cool or cold water, lemonade, etc., at pleasure. The sick-room should be well ventilated, and should be kept at a temperature of 60° or 65°. As the disease cannot be broken up or interrupted in its course by any known remedy, the thing to be aimed at in treatment is to carry the patient safely through the ordeal, and to aid nature in the process of eliminating the poison with which the system is struggling. The high fever which occurs previous to the eruption, should be relieved by means of large cool compresses laid upon the body, and changed as often as they

become warm, together with cool sponging. The wet-sheet pack renewed every fifteen or twenty minutes until the fever is lessened, is a very efficient remedy. When the face is flushed and the headache severe, ice compresses or ice bags should be applied to the head. If there is much vomiting and retching, the patient should swallow small bits of ice. Ice compresses should also be applied about the neck when the throat symptoms are severe.

The burning and itching of the eruption is best allayed by means of cold compresses, which should be changed as often as they become warm. If the odor is very bad, a lotion composed of an ounce of carbolic acid, one-half pint of glycerine, and two pints of water, may be applied two or three times a day. The solution should be well shaken each time before it is used. It has the effect not only of correcting the bad odor, but also to allay itching of the skin. Frequent inunction of the whole body with vaseline or sweet oil should be practiced once or twice a day.

When the scabs are formed, and are coming off, the patient should take a warm bath twice a day. Various plans have been adopted for the purpose of preventing "pitting." One of the most common, and probably quite as effective as any, is that invented by the ancient Arabian physicians, which consists in letting out the contents of each pustule by a fine needle passed under the skin a little ways from the edge of each vesicle. Touching the pustules once or twice a day with tincture of iodine is also well recommended as a means for preventing pitting. Another remedy recommended by some physicians is keeping the patient in the dark; but this plan is not a good one, as the deprivation of sunlight has a bad effect upon the course of the disease. Keeping the face covered with cotton well soaked in carron oil, a mixture of equal parts of olive oil and lime water, is also an excellent measure to prevent pitting; but the mixture has a bad odor, and is gummy and disagreeable. Covering the face with a thick layer of starch paste is excellent for the same purpose. None of these plans are entirely successful, however, and simple inunction of the skin, and the continuous application of the cold compresses, are probably as effective as any measures which can be employed. Adding a little soda to the water in which the patient is bathed, will facilitate the separation of the hard crusts which form near the conclusion of the disease.

The old-fashioned sweating process in which the patient was smothered beneath heavy blankets, and kept in a highly heated apartment de-

prived of fresh air, and still further heated by stimulating drinks, cannot be too strongly condemned. This method of treatment is a relic of the Dark Ages. There are no grounds whatever for fear that the eruption will be driven in by the proper application of water, even at quite a low temperature. Care should be taken, however, that the patient is not exposed to drafts, although there is much less danger of taking cold even from this source than is generally supposed.

Some years ago we saw an account of a patient who became delirious while undergoing treatment by the old-fashioned method, and while the attendant was absent for a few moments, threw himself out of the window into a snow-bank, where he was found by the attendant upon his return. The result, instead of being disastrous as might have been supposed would be the case, was in the highest degree favorable; the exposure to cold having the effect to diminish the fever in such a degree that the patient pretty soon became conscious, and made a good recovery.

Some years ago, when practicing in connection with one of the dispensaries in New York City, we had ample opportunity for observing the tenacity with which the ignorant classes cling to the old idea that fresh air is fatal to small-pox. In one case, we found a little boy suffering with the worst form of the disease, lying in a crib unconscious, dressed in the same clothing in which he had been taken sick four or five days previous, and almost stifled with the foul and heated atmosphere of the unventilated room. Notwithstanding our most earnest appeals for fresh air for the little patient, the parents insisted on keeping the windows and doors tightly closed. The little fellow survived, notwithstanding, but that he did not die was certainly not due to the efforts of his parents in his behalf.

It is now pretty well settled that the disease cannot be averted nor mitigated by vaccination after exposure, even though it be performed immediatel

COMPARATIVE TABLE OF ERUPTIVE FEVERS.

NAME.	PERIOD OF INCUBATION.	DAY OF ERUPTION.	CHARACTER OF ERUPTION	RASH FADES.	FEVER.	DURATION.
Measles	7-14 Days.	4th Day.	Small red spots, in quarter-moon shaped clusters.	7th to 9th Day.	Moderate, increased by eruption. No secondary fever.	6-10 Days.
Chicken-pox.	4 Days.	2d Day.	Small pimples which become vesicles.	Scabs form 4th Day.	Very slight.	6 or 7 Days.
Scarlet Fever.	1-14 Days.	2d Day.	Bright scarlet, diffuse, in large spots or uniform.	5th Day.	Very high, continues through eruption.	8-10 Days.
Small-pox....	1-3 Weeks.	3d Day.	Small red pimples, which become vesicles and then pustules.	Scabs form 9th to 10th day; fall off at end of two weeks.	Very high at first; relieved when eruption appears: fever reappears on eighth day.	2-3 Weeks.

MALARIAL DISEASES.

Nearly all parts of the temperate and torrid zones are subject to some form of malarial disease. There is probably little doubt in the minds of any great number of intelligent physicians at the present day, that the cause of this class of affections is an organic germ of some kind, although its exact nature may not be as yet precisely made out. Malarial diseases occur with the greatest frequency in the vicinity of marshes and lands subject to overflow, as borders of lakes, low lands adjoining rivers, etc. The danger from these sources exist not while the soil is submerged, but while it is drying up. A great increase of frequency in the occurrence of malarial disease has also been observed to result from the breaking up of new land, and especially from the exposure of what is termed "made land," in digging trenches for the purpose of laying water pipes, etc., in cities. In New York City, a large portion of which is built upon low marshy land which has been filled up since the city has been improved, it has been frequently observed that malarial diseases of various sorts quickly make their appearance upon streets in which deep trenches are being dug for the purpose of laying water and gas pipes. It would be a mistake to suppose that low marshy districts are the only ones affected. For some reason not well understood, certain localities which exist at quite high altitudes are also subject to malaria. For example, it is met with in the Apennines at a height of 1,100 feet, in the Pyrenees at an altitude of 5,000 feet, in the island of Ceylon, more than 6,000 feet above the level of the sea, and in Peru, at a height of 10,000 feet. It is found upon the high bluffs of Gibralter, as well as on the low plains of Italy.

Not infrequently an individual may be exposed for months or even years to malaria without the appearance of any of the characteristic symptoms of malarial poisoning until the attack is excited by unusual fatigue, taking cold, exposure to fog or night air unusually heavily laden with the poison, or some similar cause. Experience seems to show that exposure to the poison when the stomach is

empty, especially early in the morning or evening, is very likely to occasion an attack. Sleeping in damp beds, living in basements or cellars, or in houses densely shaded by tall trees, may render the system susceptible to the poison, and thus occasion an attack. There is also reason for thinking that the disease may be communicated through water. The author of the article on malarial disease in Ziemssen's Encyclopedia, reports a case in which a body of soldiers who filled their canteens from a marshy district before embarking on a voyage, all suffered symptoms of malarial poisoning soon after drinking the water, the only ones of their number who escaped being the few who purchased water from the sailors, none of whom were attacked. The disease may make its appearance in a few hours after a person has been exposed to the poison, as by a ride in the night air, or a boat ride in the evening or early morning; or several weeks or months may elapse before the characteristic symptoms make their appearance.

What Is Malaria?—This interesting question has been often asked, and frequently answered, though not in a manner which has been considered satisfactory. Profs. Klebs, of the University of Prague, and Tomassi-Crudeli, of the University of Rome, have together conducted an investigation of the malaria of the Roman Campagna, with the following conclusions:—

1. The poison of malaria is met with in malarious localities even during the season when man does not contract malarial disease.

2. At this season of the year the poison is found in the layers of the air in contact with the surface of the ground in malarial sections. The experimenters collected the poison by means of powerful blowers by which large quantities of air were forced against the surface of glass smeared with glycerine, in which the poison was caught and retained.

3. Large quantities of water hinder the development of malaria.

4. The poison of malaria is a distinct organism, belonging to the genus *bacillus*. It is found in the soil of malarious regions in the form of minute spores.

5. When the malarial spores or germs are received into the system of an animal, they develop into long filaments which separate by transverse division into shorter filaments, new spores being developed at the points of division. The organism has been named *bacillus malaria*.

In experiments upon animals, the observers found that liquids containing the spores described, when injected into the blood of rabbits, produced malarial fever possessing the characteristics of remittent fever in man, causing great enlargement of the spleen,—commonly known as ague-cake in human beings,—together with increase of coloring matter in the spleen and other parts of the body. When the liquid was filtered before injection, so as to remove the spores, no such results were observed.

The effects of this poison whatever it may be, are far more serious than is generally supposed. When a person has been long exposed to the influence of malaria, a sort of tolerance on the part of the system may be established, so that active symptoms of malarial poisoning may not appear, though the evil effects are still being wrought.

Chronic Malarial Poisoning is a very common condition in malarial districts. It is generally indicated by a peculiar sallow complexion, general debility, dyspepsia, enlargement of the liver and spleen, greater or less degree of mental depression, and various other disturbances of the system. In malarious countries, almost every disease is complicated with the effects of this poison. The idea which many people have entertained that malaria in some way acts as a curative for consumption, has no foundation whatever.

Protection from Malaria.—In view of the gravity of the disease, it is certainly important that proper measures should be taken to protect the system against injuries from it so far as possible. The best means of accomplishing this is removal of the sources of the infection so far as possible. Marshes and low lands should be drained. This may be done either by ditches, or by the planting of rapidly growing trees. Among the most useful for this purpose is the *Eucalyptus globulus.* The common sun-flower has also been highly recommended by those who have employed it successfully for the same purpose. These trees and plants operate, not by destroying the poison, but by draining the damp soil from which it is generated and thus preventing its formation. Individuals who are obliged to live in malarious districts, as are a large share of the inhabitants of this country, should adopt every precaution possible to avoid all unnecessary exposure to the poison, and especially to avoid all known exciting causes. The old idea that whisky is a preventive of malarial poisoning has been long since exploded.

There is no doubt but that the malarial germs may be conveyed a considerable distance by winds. They are also conveyed by fogs. On account of the condition of the atmosphere during the night, it is probable that they are more abundant in the air at this time than during the light part of the day. There is also good reason to believe that the germs are most abundant in the lowest strata of the air. On this account, persons who live in the upper stories of buildings are less likely to suffer than those who occupy lower stories or basements.

There is reason for believing that the susceptibility to malarial poisoning is considerably affected by diet. A simple, wholesome, nutritious diet fortifies the system against diseases of all kinds by increasing its general vigor. A diet of such a character as to induce an inactive state of the liver and a weak condition of the digestive organs, will be likely to encourage the contraction of malarial diseases. A few years ago, we met a gentleman who resides in a very malarious district in the State of Indiana, who has given much attention to the matter of dietetics. He informed us that although every other family in the town had suffered from malarial disease, himself and his entire family had escaped. They were of course exposed to the malarial germs as well as their neighbors, but by their careful dietary, their systems were fortified so as to be able to eliminate the poison without severe injury.

INTERMITTENT FEVER—AGUE-CHILLS AND FEVER.

SYMPTOMS.—COLD STAGE: *Yawning; stretching of the limbs; headache; nausea, and perhaps vomiting; nails blue; goose-flesh; thirst; shivering, or violent shaking; back-ache; pain in the calves of the legs; the chill lasts thirty minutes to three or four hours.*

HOT STAGE: *Fever comes on gradually; headache increased; skin hot; sometimes lasts three to twelve hours.*

SWEATING STAGE: *The fever is followed by copious perspiration, during which headache and other symptoms subside; the patient goes to sleep and wakes up feeling quite well, and remains so until the next attack.*

This is one of the most common of all the forms of malarial disease. The above symptoms may be varied more or less in different cases. For example, the chill may be lacking entirely, or it may be replaced by other nervous symptoms, as convulsions. This is most likely to occur in children. Cases in which the characteristic symptoms of the chill are not marked, are sometimes termed "dumb ague." Several varieties of

ague are described, according to the length of time between the paroxysms. When the patient suffers a dull attack, the disease is called *quotidian*. The form in which it occurs every other day is known as the *tertian* type. When the chill occurs every fourth day it is said to be of the *quartan* type. Cases occur which come on the fifth, sixth, and even the thirtieth day. Occasionally, double types occur. A person suffering with the double quotidian type has a paroxysm twice a day. In the double tertian type, the paroxysm may occur twice in the same day, or the two sets of paroxysms may occur on different days, when we have an imitation of the quotidian form. The quartan variety, or "four-day ague," as it is sometimes termed, is often quite difficult to cure. The paroxysms may occur at a regular hour on stated days, or an earlier or later hour. The chill nearly always occurs in the forenoon, or sometime between midnight and noon. The most obstinate form of the disease is that in which the paroxysms occur with great regularity.

Among other symptoms may be noted a muddy complexion, coated tongue, often yellowish dinginess of the white of the eyes, enlargement of the spleen, and tenderness of the spleen and liver. When the spleen becomes greatly enlarged, as is often the case with chronic malarial affections, it is known as "ague-cake."

Treatment.—When possible, the patient should remove to a non-malarious locality. This is particularly important in severe cases, because one attack does not insure a person against a second, but rather increases the liability. In selecting a residence, care should be taken to avoid settling in a malarious locality. The popular remedy for malarial diseases of all kinds is quinine. The efficacy of this drug in checking the paroxysms of ague is undoubted. When given in sufficient quantity, the disease may be interrupted in almost every case. Unfortunately, however, the drug does not seem to possess the power to neutralize the poison, since the paroxsyms often show an obstinate tendency to return when interrupted in this way without further treatment. In order to effect a permanent cure, it is necessary that the patient should be subjected to thorough eliminative treatment. Packs, hot-water baths, vapor baths, and Turkish and Russian baths, are the best for this purpose. When these are first employed, the paroxysms can be interrupted by the use of a very small dose of quinine, when a very large one would otherwise have been required; and if the eliminative treatment is continued for a time, the disease is much less likely to return.

Although quinine is supposed to be the great specific for malaria and almost indispensable for the successful treatment of the disease, we have repeatedly demonstrated the fact that the disease is curable without it, and in fact without any drug whatever. Our usual plan of treating ague is this: If a patient comes to us suffering with chills every other day, having already passed through his regular paroxysm, we begin treatment with a wet-sheet pack about five or six o'clock in the afternoon. The patient is kept in the pack an hour, and is allowed to sweat profusely. The pack is followed by a wet-sheet rub, after which a thorough fomentation is applied over the liver, spleen, and bowels. A copious enema is administered if the bowels are constipated, and the patient is put to bed with a wet girdle about him. The next day the hot-air or vapor bath is administered about ten o'clock A. M., being followed by another wet-sheet rub and a fomentation over the liver. In the evening, a wet-sheet pack with a fomentation is again administered and the patient is put to bed without the abdominal girdle, well wrapped in woolen sheets and wearing a woolen night-dress. Having ascertained the time at which the next chill will occur, the attendant should be on hand at least two hours before the paroxysm is expected to begin, so as to be ready in case any irregularity should occur. The patient is now carefully observed, his temperature being taken every half-hour with the thermometer. The first indication of the approach of the chill is a slight rise in temperature. Instead of being 98½° it will be 99° or 100°, and as the time approaches for the paroxysm to begin, the temperature rises to 100½°, 101°, or even higher. When the attendant finds his temperature rising, he uses the thermometer every fifteen minutes, and if he finds it rising quite rapidly he knows that the chill may be expected very soon, and at once begins vigorous efforts to forestall it. Having previously got in readiness six or eight bottles filled with hot water, or an equal number of hot bricks, hot sand bags, or other means for applying dry heat, he promptly brings these into requisition, placing a hot jug or brick at the patient's stomach, two at his back, others at his feet, the sides of the limbs, at the hands, etc. The blankets are carefully tucked about his shoulders, extra covering is put on, and he is allowed to drink freely of hot drinks of some kind. We never advise ginger or pepper tea, as they are irritating to the stomach. In nine cases out of ten, the result of this procedure will be to convert the impending chill into a vigorous sweat. This can be accomplished in nearly every case when the patient has had the proper preliminary treatment, and when

the treatment is properly managed. It is necessary to exercise some care in its use however. It is important to get the patient sweating at just about the time when the chill would have begun. It is also necessary to use great care that the patient is not kept in the dry pack too long, since there is usually some fever even if the chill is escaped.

As soon as it is apparent that all danger of chilling is past, which will not be for an hour and a half to two hours at least, the patient should be wiped with dry, warm flannels, under the bedclothes, without exposing him to the air, and the hot jugs or bricks should be one by one removed and the extra covering gradually taken off, and thus he should be by degrees cooled off. A very slight exposure at this time, or drinking cold water, will bring on the chill. In some cases, a very slight chill will occur even in spite of these precautions, but one or two repetitions of the dry pack will almost invariably succeed. When we have been able to carry out this plan of treatment thoroughly, we have rarely failed in effecting a cure, even without the use of any other remedies. One fall we treated thirty or forty cases of malarial fever, and succeeded in effecting a cure in every case without other remedies than the eliminative treatment and the dry pack. Treatment must be vigorous and thorough.

The success of this plan of treating the disease depends upon the elimination of the poison from the system through the skin. The method of elimination for which nature manifests a decided preference is indicated by the profuse perspiration to which the disease is subject. If the eliminative treatment is continued until the brown coating disappears from the tongue, the disagreeable taste from the mouth, the dingy hue from the white of the eye, and the peculiar sallowness from the skin, the dry pack will be almost certainly successful. In fact, we believe that any measure which will interrupt the paroxysm may be considered as curative after proper eliminative treatment has removed the greater part of the malarial poison from the system.

From observation and careful study of quite a large number of cases, we have come to the conclusion that it is possible for the paroxysm to be fastened upon the system as a habit, so that it may continue long after the poison by which it was first excited has been eliminated from the body. When this is the case, anything which will interrupt the periodicity or regularity of the paroxysm will effect a cure. The same principles are illustrated in the treatment of other diseases; for example, holding the breath to stop hiccough, and practicing gymnas-

tics to relieve St. Vitus's dance. We have often known persons to be cured of ague by the adoption of some peculiar mode of treatment, such as going down stairs on the hands and knees head foremost, and similar apparently absurd measures. We knew of a case in which a man cured his daughter of ague by burying her in the ground, leaving only the head uncovered, for three hours, at about the time when the chill was expected. Another illustration of the effects of habit upon the system is in the frequency with which relapses occur months, or even years after a person has removed from a malarious district, and has apparently entirely recovered from the effects of malarial poisoning.

These relapses can always be traced to taking cold or some indiscretion which occasions a slight fever, the occurrence of which is sufficient provocation to develop the tendency to periodicity existing in the system. We have long entertained serious doubts whether this form of intermittent fever is really malarial in character except in the sense that it is due to a habit impressed upon the system by previous malarial influences. Cases of this kind are always very mild, and yield promptly to the use of the dry pack.

Treatment During the Paroxysm. The dry pack is also the best measure to diminish the severity of the chill during the paroxysm. Care should be taken not to keep the patient heated up too long, as otherwise the fever may be greatly increased in intensity. In one case, which we had under observation, the patient fell asleep in the chill, and the nurse neglected to remove the hot bricks by which he was surrounded, so that when he was aroused, after a short time, it was discovered that he had become delirious. The withdrawal of the hot bricks, and employment of cold applications to the head, and cold sponging, soon reduced the heat and relieved the delirium, however, and the patient made a good recovery.

After the fever is fully established, so that the patient has ceased to complain of chilly sensations, the amount of covering should be gradually diminished; and when the fever has reached its height, tepid sponge baths or a wet-hand rubbing should be repeated every few minutes while the head is kept cool by cloths wrung out of cold or ice water. Care should be taken not to begin sponging too soon, or to cool the patient too rapidly, as the chill may return. During the sweating stage the patient should be wiped off with dry flannels; and

at its conclusion, the wet clothing should be exchanged for clean and dry garments, and a tepid sponge bath should be administered.

Cold affusions and the application of ice to the spine has been recommended as a means of interrupting the chill. We consider these as harsh measures, and never employ them. In fact, about all the treatment that is of any benefit during the paroxysm is such as will render the patient more comfortable at the time. Nausea may be relieved by hot drinks during the cold stage, and sips of cold water, or bits of ice, during the hot stage. If the patient has eaten a meal just before the beginning of the chill, it is generally best, when there is very much nausea, to assist him to empty his stomach by giving a warm water emetic.

The diet of an ague patient should be very plain and simple. Butter, meat, sugar, rich sauces, and all kinds of pastry, should be entirely avoided. The diet should consist almost entirely of such food as oatmeal gruel, graham or Indian-meal gruel, rice, baked apples, stewed prunes, figs, and grapes. This diet should be continued until the tongue clears off, and then the patient should return to his usual diet very slowly. The free use of lemons is generally advantageous though, as a general rule, patients become tired of them after using them freely for three or four days. As before remarked, the disease may be successfully treated without the use of quinine or any other drug, yet many cases occur in which small doses of quinine, chinoidine, or some other preparation of Peruvian bark, may be advantageously employed. We have no faith in the popular notion that it is better to allow the disease to "wear itself out." In many cases the patient becomes worn out instead of the disease. Consumption and various other constitutional disorders may arise from the long continuance of ague or any other severe malarial affection. If the disease does not yield within a week to the measures before described, it will invariably yield to a very small dose of quinine, or double the quantity of chinoidine. We rarely find it necessary to use more than four to six grains of either. After the patient has had a week's course of treatment, as before described, the remedy should be taken during the sweating stage at the conclusion of the paroxysm, or four or five hours before the time the next paroxysm is expected. Although we think it best that the use of quinine should be avoided so far as it can be, on account of its disturbing effect upon the digestive organs, we do not think there is ground for the popular belief that it injures the

bones or very frequently gives rise to permanent or serious injury of any sort. There is, however, some ground for the belief that cases of deafness are occasionally produced by its use in large doses.

Whenever its employment is thought necessary to interrupt the paroxysms of ague, it should not be relied upon as a curative measure, but should be followed by thorough eliminative treatment, such as packs, full baths, hot-air baths, and fomentations over the liver and spleen. Daily fomentations over the liver should be continued for several weeks, if necessary. In case the spleen and liver are considerably congested and enlarged, as indicated by pain and tenderness on pressure in the region of these organs, local hot and cold applications should be employed daily until the symptoms disappear, and the patient should wear for several weeks a moist abdominal bandage at night, replacing it by a dry flannel during the day. In bad cases, the moist bandage should be worn night and day, being discontinued during the daytime as soon as evidences of irritation of the skin make their appearance.

AGUE-CAKE.

What is known as ague cake, consists of an enlargement of the spleen, which is one of the results of chronic malarial poisoning. The spleen is also enlarged in typhoid fever, typhus fever, and various other febrile affections. When a person has been long exposed to the influence of malaria, the spleen frequently becomes so greatly enlarged that it can be felt beneath the lower ribs on the left side. In some cases, enormous enlargement occurs, the organ becoming fifteen or twenty times its natural size. The result of enlargement of the spleen is, in some cases, a condition which has been previously described as lukæmia, a condition in which there is a very great increase in the number of white blood corpuscles, more or less pain and tenderness which is increased on taking a deep breath, on coughing, sneezing, or producing pressure over the organ, and an unpleasant feeling of weight in the left side in consequence of the enlargement of the spleen.

Enlargement or congestion of the liver also generally exists in these cases, as indicated by symptoms on the right side similar to those already described.

Treatment.—Mosler, Hartz, and other eminent European physicians recommend very highly the use of the cold douche over the region

of the spleen, applied from one to three minutes daily. Dry packs are also a favorite and a very successful remedy in Germany. In India, the disease is frequently treated by means of puncturing with long needles. The treatment is said to be successful. Our plan of treatment is the alternate hot and cold spray or douche, applied over the spleen, general derivative baths, as packs and hot-water baths employed two or three times a week, and the local use of electricity. When electricity is used, the two poles should be applied over the spleen in such a way as to pass the current through it. Enlargement of the spleen is said to be curable by the use of the various preparations of Peruvian bark. A remedy to which attention has been more recently called, is the use of the milky juice of the unripe fruit of the pawpaw tree. A teaspoonful of the juice is mixed with sugar and divided into three parts, which are taken at equal intervals during the day. Electricity used in the manner described is very highly recommended by eminent Austrian physicians, and we consider it of great value.

PERNICIOUS INTERMITTENT FEVER—CONGESTIVE CHILLS.

SYMPTOMS.—Chill longer and harder than usual; convulsions; epilepsy; tetanus; symptoms resembling hydrophobia or delirium, followed by stupor ending with sweat; coldness after sweating stage; hemorrhage from bowels; congestion of the lungs; pneumonia; pleurisy; symptoms resembling those of cholera; jaundice.

Pernicious intermittent fever appears in a variety of forms, most of the symptoms of which are included in the above list, though all are not found in any one case. The paroxysm may occur suddenly, without warning, or may be preceded by one or more paroxysms of the usual character, or may be gradually developed, the symptoms becoming more severe with each successive paroxysm. The disease is most frequent in the Southern States and in hot countries. According to Dr. Drake, it has prevailed at various times along the southern shore of Lake Michigan, between Chicago and the mouth of the St. Joseph River, and at various points on the shores of Lakes Erie and Huron.

Treatment.—This is a very dangerous malady, and requires prompt and vigorous treatment. The same measures which have been prescribed for ordinary intermittent fever should be employed, but with still greater vigor. During the chill, the most energetic measures should be employed to excite action in the surface of the body by hot and dry applications and vigorous rubbing of the skin with hot flannels. The inhala-

tion of a few drops of nitrite of amyl or of chloroform we have found effective in interrupting a congestive chill. *Pilocarpin*, a remedy which possesses the power of producing copious perspiration, is also useful for the same purpose. Symptoms relating to the stomach and bowels should be treated as when the same symptoms occur under other circumstances. Ice, and cold compresses should be applied to the head with great thoroughness, and ice should also be applied to the spine as soon as the chilly sensations have passed away. Some recommend the application of ice to the spine during the chill, and there is no doubt that good may be accomplished by this measure if properly used. If employed, care should be taken to confine the application to a narrow strip just over the spinal column. There is less danger of chilling the patient than is generally supposed if this precaution is observed.

After the attack, everything should be done to fortify the patient against a succeeding paroxysm, which is very likely to be more severe than the first, if it occurs. When possible, a physician should be called in. A full dose of quinine will diminish the liability of a second attack and may thus be of benefit. The same precaution should be observed to prevent the occurrence of another paroxysm as has been described in the treatment of ordinary intermittent fever for preventing the chill.

REMITTENT OR BILIOUS FEVER.

SYMPTOMS.—Chill followed by fever and sweating; no complete intermission; all the other symptoms of ague or intermittent fever are present; sometimes jaundice; remittent fever may either follow, or terminate in, ague.

The principal distinction between this disease and intermittent fever is the fact that in remittent fever there is no complete intermission in which the patient is entirely free from fever. At the commencement of the attack the remission is generally quite marked, sometimes lasting a few hours and occasionally extending to one or two days, often corresponding exactly to the intermission in ague. After a few days the fever generally becomes continuous.

Remittent fever may generally be distinguished from typhoid fever by the fact that the temperature is usually the highest in the morning. The opposite of which is true in typhoid and typhus fevers.

Typho-Malarial Fever.—Remittent fever may be complicated with typhoid fever, constituting a disease known as typho-malarial fever. When typhoid fever occurs in malarious districts, it is very likely to be

complicated with malarial. In these cases, either element may be the predominating one.

Typho-malarial fever is not, as many suppose, malarial fever in which the typhoid condition occurs, but an actual union of the two diseases. Under the name of "camp fever," typhoid-malarial fever was very prevalent in some portions of the army during the war. This form of fever is much more grave than either simple malarial or typhoid fever. It is distinguished from either remittent or typhoid, by the fact that it presents a mixture of the symptoms characteristic of each.

Treatment.—The treatment of this disease consists in the employment of packs, full baths, hot-air baths, and other vigorous eliminative measures.

The wet-sheet pack is really one of the most valuable remedies which can be used in this class of diseases. It may be administered either during the fever or during the remission. The object of its employment during the fever, is for the purpose of reducing the temperature. During the remission, it may be used as an eliminative. The hot-air or vapor bath should be used during the remission. When the fever is high, the patient should be sponged frequently with tepid water, and tepid compresses changed as frequently as necessary should be applied to the abdomen. Constipation of the bowels may be relieved by daily enemas. When the fever is high, cold enemas, retained as long as possible, may be employed with advantage. The same directions respecting diet, medicine, etc., which have been given in describing treatment for intermittent fever, should be followed in the treatment of this disease.

MASKED INTERMITTENTS.

Persons living in malarious countries often suffer from obscure difficulties, the cause of which may be usually mistaken for some other than the real one. In many cases it will be found that the real cause of a large number of peculiar affections, especially functional disturbances of the nervous system, is chronic malarial poisoning. One of the most frequent diseases produced by malaria is neuralgia, which most often affects the face. The intercostal and sciatic nerves are also frequently affected. Occasionally the heart is the seat of the neuralgic pain, in which case the patient suffers with very severe attacks of palpitation, difficulty in breathing, accompanied by a severe pain affecting the left side, and extending down the left arm.

In these attacks, the skin is generally cold and the patient may become unconscious. Paralysis of sensation, loss of hearing or speech, and other nervous disturbances may be produced by malaria. Sleeplessness at night and drowsiness during the day-time are other symptoms of chronic malarial poisoning. Jaundice, arising from an inactive condition of the liver produced by the poisonous influence of malaria, is very frequent.

Enlargement of the spleen, which almost always results from repeated attacks of malarial disease, sometimes gives rise to a peculiar coloration of all the internal organs. In a case of this kind, the condition of which we had the opportunity of examining, *post-mortem*, the brain was so deeply colored as to present a purplish appearance. When due to malaria, these affections are generally periodical in character. For example, malarial neuralgia will be likely to occur at a regular hour each day, as does the chill in ague.

Treatment.—The only cure for this class of affections is elimination of the malarial poison from the system. Sometimes the patient is too weak to bear sufficiently vigorous treatment. In this case the employment of quinine is advisable. In some cases, the disease seems to resist all ordinary remedies, so long as the patient remains in a malarial locality, and it then becomes necessary to advise him to remove to a less malarious location. Fomentations, electricity, massage, and such other measures as are elsewhere recommended for the various conditions included under this head when produced from other causes, are equally applicable as means of palliation or of aiding in recovery.

DISEASES OF THE SKIN AND HAIR.

The anatomy, physiology, and general hygiene of the skin, have been considered in the first part of this work, and hence space need not be devoted to this part of the subject in this connection.

Many popular errors are prevalent respecting diseases of the skin, which originated at a time when the diseases of this portion of the body were very little understood. Modern investigations in this branch of medicine, through the aid of the microscope, have brought to light many interesting facts which explain much that was formerly very obscure. Among the numerous popular errors with reference to this class of diseases, one of the most common is the idea that all eruptions of the skin indicate an obscure state of the blood. While it is true that many diseases arise from morbid conditions of the blood, this is by no means universally the case; in fact, the majority of skin diseases are distinctly local in character. The skin is not affected by morbid conditions of the blood more frequently than are the liver kidneys, lungs, nervous system, and other parts of the body. Another error which prevails very extensively, is the idea that internal maladies of a serious character are likely to occur from the "striking in" of eruptions of the skin. We have frequently been asked by patients suffering from troublesome eruptions, whether it would be safe to cure the disease, the impression being that the eruption would occur upon the mucous membrane of the stomach, bowels, or lungs, or that some serious internal malady would be developed. The opinion of those who have had the largest experience in the treatment of skin diseases is decidedly opposed to this theory; and it is probable that there is no more reason for thinking that an internal malady might be developed by curing a disease of the skin, than the contrary; namely, that disease of the skin might result from curing some internal disorder. It is probable that in most, if not all, of the instances in which internal disease seems to result from disorders or eruptions of the skin, the relation of the two is wholly due to coincidence.

Causes.—The skin is by no means so simple an organ as it appears, being, in fact, composed of several sets of organs closely combined.

From its complicated structure, and its location upon the exterior of the body, the skin is very liable to injury from the influence of external irritants of various sorts, such as friction from clothing or scratching; the the extremes of heat and cold; the action of acids or alkalies, various vegetable irritants, as vegetable and animal parasites. Persons engaged in certain trades, as brick-layers, masons, millers, bakers, cooks, washerwomen, etc., are liable to particular forms of skin disease, originating from the action of various irritants produced by these occupations.

Next in importance as a cause of skin disease, should be mentioned errors in diet. Indigestion is indeed a very frequent accompaniment of skin disease; and in a large number of cases, it is possible to trace the causative relation. The use of pastry, the excessive use of fats and sugar, fried food, condiments, as mustard, spices, and particularly pepper, excessive use of meat, and the use of tea, coffee, tobacco, and alcoholic liquors, are very frequent causes of certain forms of skin disease. Skin affections are also, in many cases, dependent upon other diseases, as diseases of the kidneys, inactivity of the liver, constipation of the bowels, scrofula, and syphilis. The skin erruptions which occur in eruptive fevers and which are the result of the disturbance of the system by a specific poison, need not be here considered, as the eruption itself is but a minor symptom of the disease. The popular notion of attributing every disease to a "humor," as remarked above, is without scientific foundation.

General Principles of Treatment.—The same kind of treatment is not effective for all kinds of skin diseases. The fashionable custom of resorting to mineral springs for the cure of skin diseases, no matter what may be their nature, is most unphilosophical, and results in great injury, since, while a few cases may be benefited, a much larger number are rendered worse. The same is true of any other single method of treatment. No matter how successful a remedy may be in one case, in another it may be as signally unsuccessful. Diseases of a purely local character require a purely local treatment. Those in which the general system is chiefly at fault, may require only general treatment, or both general and local; for example, parasitic diseases are cured by local remedies alone. The same is true of such diseases as warts, corns, dandruff, ulcers, or cancer of the skin. Scrofulous eruptions, and affections of the skin due to morbid conditions of the blood or of the internal organs, require only general treatment. Local in-

flammations, hemorrhages, nervous affections, and diseases of the glands of the skin, require both general and local treatment, in some cases one and in other cases the other being most important.

Local remedies chiefly consist of cleansing, stimulating, or astringent lotions, unguents, or of applications capable of destroying vegetable or animal parasites. General measures consist of remedies calculated to improve the condition of the blood and the nervous system. Proper diet is of the first importance, especially in chronic cases. With reference to this class of diseases, Dr. Bulkley of New York, one of the best American authors on diseases of the skin, remarks that in order to accomplish a cure, "we cannot simply apply a wash or a salve, or take a few drops of this or that remedy." Thorough attention must be given to strict compliance with all hygienic rules. Pickles, salads, deserts, etc., rich sauces, pepper, mustard, and all stimulating condiments, fats, fried food, excessive quantities of meat, excessive use of sugar, and all articles of a stimulating and clogging nature, must be wholly avoided. Tea, coffee, tobacco, beer, ale, wine, cider, and all alcoholic beverages, narcotics and stimulants of all sorts must be scrupulously avoided. The diet must be very plain and simple. Excessive quantity is equally as bad as errors in quality. Thorough mastication of food is very important. A fruit and grain diet is much to be preferred to a mixed diet. Milk and eggs can be taken in moderation with a little flesh. The less meat the patient uses, the better. Errors of diet on the part of the mother, is one of the most frequent causes of skin diseases in infants. The children of mothers who are in the habit of drinking ale, porter, beer and wine, or taking large quantities of tea or coffee, are very likely to suffer with skin diseases.

Some diseases, particularly nettle-rash, or urticaria, are caused by particular articles of food, such as oysters, clams, lobsters, mushrooms, bananas, strawberries, pine-apples, etc. In these cases, it is, of course, necessary to discover the obnoxious article and discontinue it. General baths, such as vapor baths, Turkish, or hot-air baths, and the warm full bath, are of immense advantage in the treatment of many forms of skin disease. The various ointments, lotions, cosmetics, etc., which are sold in drug stores are generally worthless and frequently worse than useless. We have met cases in which exceedingly harmful results had followed the use of these preparations.

Various Forms of Eruptions, etc.—The following are the principal forms of the several elementary lesions of the skin:—

Maculæ, or *Stains*, are simply spots of a round or irregular form, not elevated above the surface of the skin. They may be due to deposits of blood or the coloring matter of the blood, to fungus growth, or to deposits of bile pigment.

Redness, or Hyperæmia.—Due to distention of the arteries or veins When arterial in character, the difficulty disappears upon pressure with the finger. It may be accompanied by violent itching and rising of temperature; is frequently followed by peeling off of the scarfskin. It may be occasioned by local irritation, by changes in the blood, or by nervous excitement.

Wheels consist of reddish swellings with pale centers, which form rapidly and disappear as suddenly. The nettle sting is a perfect illustration of the wheel. They are accompanied by heat and severe tingling. Wheels are characteristic of nettle-rash.

Papulæ, or *pimples*, are small hard or raised formations in the skin.

Vesicles are little sacs in the skin, containing serous fluid or sweat.

Blebs, or *bullæ*, are simply large vesicles.

Pustules are small, round vesicles containing pus.

Squamæ, or *scales*, are detached portions of the thin scarfskin or epithelial scales.

Tubercles are little solid elevations of the skin, larger than papules.

Nodules are solid masses, larger than tubercles and smaller than cherries. Masses larger than cherries are called tumors.

Scabs or *crusts* are dry, hard masses of pus and dead skin.

Excoriation is a removal of the epidermis, exposing, but not injuring, the outer skin.

Ulceration is an excavation made in the skin by disease. It usually leaves a scar upon healing.

Fissure is a crack in the skin, such as occurs on the knuckles when the hands are chapped.

A Cicatrix, or *scar*, is a growth of hard fibrous tissue, occupying the place of the healthy tissue, which has been removed by injury or disease. Some diseases of the skin exhibit only one form of eruption, while in others, a number of elementary lesions occur, either at the same time, or in successive stages of the disease. In some cases, also, two or more different diseases of the skin occur at the same time.

ERYTHEMA.

This is a disease of the skin characterized by redness, due to active congestion or inflammation. It may occur as a simple diffused redness, produced by cold, friction from wearing flannel clothes, the rubbing together of two folds of skin, etc. It also accompanies various other diseases of the skin. Sometimes, in addition to the diffused redness, an eruption of small red pimples occurs on the face or hands. The digestion is often disturbed, and the patient feels slightly feverish. The duration of the disease is usually very short, little treatment being required. A form of the affection with which young children sometimes suffer, known as "chafing" or intertrigo, is sometimes quite obstinate.

Treatment.—The diet should be very light and unstimulating. A warm bath should be taken daily, and the affected parts should be covered with a thin cloth moistened with tepid water, or with a solution of saleratus, a teaspoonful to a pint of water. Intertrigo in young children, generally arises from indigestion and want of cleanliness. The parts should be thoroughly cleansed with tepid water and castile soap twice a day. They should be afterward bathed with cold water and anointed with vaseline or olive oil. Browned flour, corn-meal, starch, and various other powders are frequently used. Starch and powdered lycopodium seed are frequently used, though it is doubtful whether they are really required. Very often, fuller's earth may also be useful. When powders are employed they should be dusted upon the parts after they have been cleansed and dried.

URTICARIA—NETTLE-RASH—HIVES.

This is an eruption characterized by wheels like those caused by nettle stings, each consisting of a white raised spot in the center of a red patch. This eruption is peculiar for the suddenness with which it appears and disappears. The first symptom is severe itching of the skin, after which the eruption suddenly appears. It is generally the result of errors in diet, particularly the use of unwholesome or any irritating food. Canned meats are very likely to occasion it. In some persons, it is occasioned by eating certain fruits, as strawberries, raspberries, pineapples, etc. It may result from simple indigestion. Bites of bugs, flies, lice, etc., should also be mentioned as a cause. The eruption may disappear within two or three hours, or may last two or three days, or longer.

Chronic nettle-rash is generally due to dyspepsia or disorder of the liver. It is often a very troublesome affection.

Treatment.—If the patient is suffering with indigestion, a warm emetic may be indicated. The itching and burning may be relieved by applying to the skin a lotion made by dissolving a teaspoonful of saleratus or soda in a goblet of water. Vinegar or equal parts of alcohol and water, may also be used. Sponging the surface of the body with very hot water will generally give relief. Urticaria from bites of insects, or nettle stings, in which the pain is often very severe, may be relieved by the application of a mixture of chloroform and glycerine, in the proportion of one of the former to four of the latter.

HEAT-RASH.

This is a form of eruption which often occurs during the intense heat of summer. It may consist of simply a diffused redness of the parts exposed to the direct action of the sun's rays, usually termed sunburn, or in the form of an eruption of minute, red pimples, known as "prickly heat" eruption, or "heat eruption," which is accompanied by severe prickling and itching. Sunburn, when severe, is followed by peeling off of the epidermis. Prickly heat generally disappears within a few hours, but may continue some time and become a real eczema.

Treatment.—For sunburn, cool the affected parts with tepid compresses, and anoint well with vaseline. Persons subject to prickly heat should wear silk or cotton next the surface, and should avoid overheating themselves by over exertion during hot weather. Irritation of the eruption may be relieved by cool baths or cool sponging, bathing the surface with soda or saleratus water, a teaspoonful to the pint. After bathing, the surface should be dried by a gentle patting with a fluffy towel and without rubbing.

ERYSIPELAS—ST. ANTHONY'S FIRE.

This an inflammation of the skin. It generally affects the head and face. It is attended by quite a high fever, which usually begins with a chill. The patient is usually weak and prostrated. The skin is swollen, red, and glossy. There is a burning sensation in the affected parts, and it is tender to the touch. The disease extends quite rapidly, in some cases involving the whole scalp and head. Sometimes the disease extends into the tissues beneath the skin. Blisters and abscesses

sometimes form, in severe cases. Sometimes the fever rises so high as to occasion delirium. When the scalp is severely affected, the hair generally falls out, but soon grows again after recovery. The disease is somewhat contagious; one attack seems to render a person more liable to another.

Erysipelas is very likely to occur in wounds and after surgical operations, especially in hospitals. In these cases the results are often very serious. The disease is more common in warm weather than in cold. It generally lasts about a week, terminating in the peeling off of the epidermis. The form of the disease, known as "wandering erysipelas" generally attacks the extremities first, rapidly extending toward the trunk. In this form of the affection, the fever is generally moderate, but it is likely to continue for several months.

Treatment.—This is quite a serious affection; and unless the attack is a very slight one indeed, a physician should be consulted at once. When the skin is very tense, hot, and painful, cold, and even ice compresses, should be applied. There is no danger, as many people suppose, of causing the disease to "strike in." Cases in which the disease extends to the membranes of the brain are not due to the eruption being repelled from the surface. The disappearance of the eruption is the result of the occurrence of internal inflammation. The old plan of treatment by encircling the diseased part with a dark line by burning with lunar caustic, is of about equal efficacy with the so-called "sympathetic remedies" often employed for this affection. Nothing equals the application of cold for reducing the local inflammation. It should be carefully watched, however, and as soon as the color of the affected part becomes bluish purple, or a bright scarlet, the cold should be exchanged for hot fomentations in order to excite activity of the blood-vessels and overcome the sluggishness of the circulation of the affected part. The cranberry poultice, and various other similar remedies, possess no special value in this disease. The general fever by which it is always accompanied, and which sometimes runs very high, should be treated by means of cool compresses, cool sponging, wet-sheet packs, and cool enemas. The diet of the patient should be very light, and unstimulating in character.

CHILBLAINS.

This is an inflammation of the skin, produced by exposure to severe

cold. It affects parts which have been partially frozen. The feet are most likely to be affected. The skin is red and somewhat swollen, especially in the vicinity of the joints. There is also much burning and itching In some cases the skin becomes cracked or ulcerated.

Treatment.—For the cure of severe cases of chilblain, a hot and cold foot bath should be taken every night just before retiring Carbolic-acid ointment, containing ten drops of carbolic acid to the ounce of vaseline or lard, is a very excellent remedy. Cabbage leaves are also a remedy which enjoys some reputation. Another remedy highly recommended is gently rubbing the affected parts with lemon juice just before going to bed. When ulceration occurs, carbolic-acid ointment should be applied with pledgets of cotton

COLD OR FEVER SORES—HERPES.

In this disease, the eruption consists of patches of little blisters or vesicles, each of which is surrounded by a little ring of inflamed tissue. The eruption is most always accompanied by some fever and pain, or smarting, in the affected part. They do not generally burst, but dry up, the contents first becoming milky and then a crust forming which falls off in a few days, leaving a reddish stain in the skin. A very common form of the disease is known as shingles, in which the eruption occurs on one side of the trunk, following the course of the nerve. The technical name of this form of the disease is *Herpes Zoster*. It is supposed to be due to an inflammation of a nerve of sensation. There is a popular notion that if this disease encircles the body, the patient will die. This idea is incorrect, however. The disease never does encircle the body from the fact that the nerve extends only to the central line, though cases have occurred in which corresponding nerves on opposite sides of the body were affected, making a seeming exception to the general rule The result is no more serious in these cases, however, than in others. A still more common form of herpes is met in the little sores which form about the mouth in fevers, known as cold-sores or fever-blisters. A similar eruption sometimes occurs about the genital organs.

Treatment. The parts should be protected from irritation by the friction of clothing, and rubbing should be particularly avoided, as the disease will be greatly aggravated thereby, in some cases, scars being formed. An attack of shingles, if not properly treated, sometimes leaves a neuralgia behind it. The affected parts should be dusted with

powdered starch, or smeared with carbolic-acid ointment,—ten drops of carbolic acid to the ounce of vaseline,—covered with cotton or wool. The neuralgia, which sometimes continues afterward, should be treated by fomentations. The formation of cold-sores can generally be checked by the application of spirits of camphor to each blister.

ECZEMA—SALT-RHEUM—MOIST TETTER—SCALL.

This is one of the most common of all skin diseases. It occurs in a great variety of forms and at all ages, and is said to constitute one-half of all the cases of skin disease. It is not contagious, as many persons suppose. Its most common location is on the face and scalp, and about the thighs. When the eruption first begins, it appears as a number of red points, papules, or vesicles, which run together, and, after being scratched, exude moisture. It is accompanied by great itching. After a time, scabs are formed. In infancy, the scalp is most often affected, when the disease is termed *scald-head*, or *milk-crust*. The eruption is also sometimes called *tooth-rash*, in children, when it occurs during the teething period. When the eruption has a free liquid discharge, it is sometimes called moist or running tetter. A mild form of eczema sometimes attacks infants in hot weather, when it is termed *heat eruption*, *red-gown*, or *red-gum*. What is known as chafing, or intertrigo, is also a form of eczema. Eczema is frequently seen in children in the form of raw, red patches, with a moist surface, situated within the bend of the elbow or knees, or behind the ears. Washerwoman's, brick-layer's, grocer's and baker's itch are different forms of eczema in which the hands are affected, the cause being the various irritants to which the hands of these different classes of persons are exposed. Eczema of the legs is often observed in old people and persons of sedentary habits. An exceedingly aggravating form of the disease is frequently due to varicose veins, and sometimes gives rise to ulcers. In acute cases, the eruption generally presents a red surface, exuding moisture. In chronic cases, the skin is thickened and covered with dry, hard scales. It is almost always accompanied in all its stages and forms by fearful itching. It is sometimes difficult to detect, owing to the fact that it may resemble almost any other disease of the skin.

Eczema may be produced by anything which irritates the skin, poison dye-stuffs, colored underclothing, stockings, hat linings, arnica, poison ivy, friction of the skin, uncleanliness, especially in children whose diapers are not properly changed. Irritating soap, ex-

posure to heat and cold, and various other changes, are frequent causes of eczema. Dyspepsia, rheumatism, gout, scrofula, and any disease which greatly deteriorates the general health, may produce eczema. We have frequently seen very severe cases of eczema produced by wearing the moist abdominal bandage for too long a time.

Treatment.—The disease is often very chronic and frequently obstinate. It is, of course, necessary that all the known causes of the disease be first removed. When there are external irritants brought in connection with the skin by the daily occupation, either the patient must rest from labor or engage in some other business. It is very important to give attention to the general health, especially the improvement of the digestion, and the removal of gouty, rheumatic, or scrofulous conditions of the system. These conditions have been fully described elsewhere. In many cases a course of thorough eliminative treatment is required to get the blood in a good condition. The irritation or itching may often be relieved by bathing the parts in saleratus water, a drachm to the pint, by carbolic-acid ointment, ten drops to the ounce of vaseline, by bran tea, starch powder, and other soothing applications. A very excellent lotion for use in these cases is the following: Two drachms of carbonate of soda, one ounce glycerine, seven ounces of bran tea or slippery-elm water. In eczema of the head, it is often necessary to cut the hair close to the scalp. When thick scabs are formed, they may be removed after softening with vaseline or sweet oil, which should be freely applied at night and covered with a cloth held in place by a night-cap or bandage.

PSORIASIS—DRY TETTER.

This disease may affect persons of all ages but is most common in adults. The eruption consists in separate spots or patches of a dull red color covered with an abundance of white, branny scales which fall off readily. The separate patches are generally circular. The eruption occurs most often on the outer surfaces of the joints, as of the elbow, the front of the leg, or knee, being by this particular, distinguished from eczema, which most often affects the inner surfaces, as the bends of the elbows and knees. It often attacks the scalp, when it is the cause of dandruff. Psoriasis also differs from eczema in that it seldom presents a moist surface and rarely itches. The disease is sometimes very chronic, lasting many months or even years. The

causes of the affection are somewhat obscure. It is probably generally due to disorders of nutrition. It is not in the slightest degree contagious. Sometimes eczema and psoriasis are combined.

Treatment.—This disease is sometimes very difficult to cure, and it has a stubborn tendency to return. Very frequently, just as one set of spots have disappeared, another crop will make their appearance. Especial attention should be given to the general health. The diet should be simple, but unstimulating; it should be mostly fruits and grains. The patient should take frequent baths. We have seen some cases very greatly benefited by the vapor bath. Packs are also useful, but the skin should not be excited too greatly, especially when the eruption has a very reddish appearance. Carbolic-acid ointment and tar soap are of some value as local applications. Bathing the affected parts with saleratus or soda water is also useful.

ACNE—FACE PIMPLES.

This is a very common affection, especially between the ages of fifteen and thirty years. The seat of the disease is the sebaceous follicles or oil-glands of the skin. The eruption consists in pimples scattered over the face, neck, back, and chest. The inflammation of each follicle may run its course in three or four days, or may continue for a week or ten days. When the inflamed part becomes indurated, or hardened, the inflammation may continue for several weeks. Several varieties of the disease are observed; that just described is the most common. Another form consists in obstruction of the outlets of the sebaceous glands, producing what are sometimes termed flesh-worms, or grubs. This form of acne is indicated by little black specks, seen upon different parts of the face, but chiefly upon the skin of the nose. Each speck makes the obstructed outlet; and if pressure is made on either side, something having the appearance of a small grub may be pressed out. Upon careful examination, this so-called grub proves to be a mass of hardened sebaceous matter, or sebum, which has assumed its grub-like form by being pressed through the small mouth of the follicle. The black speck, giving to this little cylinder of fat the appearance of a head, is simply a small accumulation of dirt. The technical term for one of these little masses is *comedo.* When examined under a microscope, these are often found to contain a whole family of parasites, male, female, and their numerous progeny.

In Plate VIII may be seen an excellent representation of these parasites, which rejoice in the title of *demodex folliculorum*. It is not probable that this parasite gives rise to the disease, but rather that the distended follicle furnishes an agreeable home for this insect, which is closely related to the *acarus scabiei*, or itch mite. In another form of acne, in which the nose and the adjoining portions of the cheek are chiefly involved, in addition to the pimples described there is intense congestion and redness of the parts, due to enlargement of the blood-vessels which are sometimes so much distended as to be distinctly visible. This form of the disease is termed *acne rosacea*. In still another form of the affection the inflammation is chiefly confined to the roots of the hairs. This form is sometimes known as *barber's itch*. The chief causes of acne are erroneous dietetic habits. People suffering with acne can bring on an attack at any time by the use of rich pastry, fried food, and large amounts of sugar or sweet food, etc. Doughnuts, griddle cakes, cheese, hot bread, preserves, candies, and similar dietetic abominations, are very active causes of different forms of this affection. *Acne rosacea* is very frequently the result of using alcoholic liquors in some form, on which account it is sometimes termed, when seen in persons addicted to drinking, the "rum-blossom." Acne is sometimes the result of debilitating habits, particularly secret vice in young persons, though it should be by no means supposed that every young person affected with this disease is addicted to secret vice.

Treatment.—This disease is often very obstinate. It may only be cured by entire discontinuance of all the causes. The person subject to it must live upon the most simple and unstimulating diet. Articles of food mentioned as causes must be scrupulously avoided. The diet of the patient should consist of cooked grains and fruits. Fat meats, and fat in all forms, used as seasoning in food, must be strictly excluded from the dietary. The less sugar taken the better. Hot coffee must also be avoided, together with alcoholic liquors and tobacco. Daily baths, the wet-sheet pack two or three times a week, fomentations over the region of the liver, and the abdominal bandage worn nights, are the principal measures of treatment to be recommended. Disorders of digestion, of the liver, of the menstrual function, and other internal maladies should receive such attention as the particular case may demand. It is especially important that constipation of the bowels should be relieved by proper diet, and, if necessary, by the enema or other measures recommended for this condition.

When there is much irritation of the face, warm poultices, hot vapor douches, and sponging with water as hot as can be borne, are the proper remedies. A soft sponge should be used.

The face should be kept covered with vaseline so as to protect it from the air. Cocoa butter will answer the same purpose. In the variety of the disease chiefly characterized by grubs in the skin, the internal use of glycerine in doses of two or three teaspoonfuls, taken half an hour after each meal, has been highly recommended. It is probably beneficial by preventing fermentation of the food. The face should be washed two or three times a day with a solution of soda, saleratus, or borax, a drachm to a pint of water. These lotions are improved by adding an ounce of glycerine to each pint of water. An ointment composed of thirty drops of carbolic acid, two drachms of glycerine, half an ounce of vaseline, thoroughly mixed, is very useful in chronic cases in which there is considerable induration. If irritation of the skin is produced, a little more vaseline may be added. The ointment should be applied at least twice a day, after the face has been washed with soda or saleratus solution. The following preparation is also useful as an ointment to be applied at night, being thoroughly rubbed in: Sulphur and glycerine, a teaspoonful each; vaseline, one ounce. The ointment may be scented with rosemary, or any other agreeable oil. The last-named remedy is also excellent for use in acne rosacea.

COMEDO, OR GRUBS.

When these are present in large numbers, the face appears as though gun powder had been blown into it, or pepper sprinkled over it. It is best to remove them, as, if not removed, nature undertakes the work by setting up an inflammation about each one and producing real acne. They may be squeezed out by pressure between the nails, but are best removed by a little tube with an opening about the thirty-second of an inch in diameter, or a watch key, which should be pressed directly down upon the affected gland, care being taken not to injure the skin by too great pressure. The further treatment of comedo should be the same as recommended elsewhere for oily skin.

PEMPHIGUS—WATER BLEBS.

This eruption consists of water blisters, varying in size from that of a pea to that of an egg, or larger.

Treatment.—This is a very severe disease, and is often fatal. The blebs should not be ruptured, but the fluid may be let out of them by pricking with a needle. Hebra, the great dermatologist of Vienna, several years ago insisted that bathing was injurious in these cases; but we see by late reports that he is now treating them by prolonged immersion in water about the temperature of the body. He keeps some cases immersed six or eight months.

IMPETIGO.

This is an eruption characterized by small pustules. It is really a variety of eczema. It frequently occurs about the mouth and nose in children. There is a contagious variety of this affection in which the pustules are small and flat, and spread rapidly over the body, generally beginning on the upper part of the body and extending downward.

Treatment. The treatment is essentially the same as that recommended for eczema.

ECTHYMA.

This is a mild form of inflammation of the skin. It is characterized by small pustules surrounded by a ring of hard tissue. The eruption is frequently produced by scratching induced by lice. The eruption may be occasioned by local irritants of any kind in persons who are badly nourished.

Treatment.—Remove the cause, if due to the presence of lice. When the pustules become ulcerous, carbolic-acid ointment should be applied. If due to debility, attention should be given to the general health. If the ulcerations become quite severe and foul, the following is an excellent preparation: Boil a teaspoonful of starch in two teaspoonfuls of glycerine and six of water, when nearly cold, add a teaspoonful of tincture of iodine. Apply a little to each ulcer every day or two until a more healthy appearance is produced.

PITYRIASIS.

This disease consists in an excessive shedding of the scarf-skin in rm of branny scales. It may result from local irritation or general ion. It very frequently affects the scalp, being one cause of A peculiar form of the disease, known as *pityriasis rubra*,

or red pityriasis, begins on some part of the body as a red scaly spot, which rapidly extends over the whole surface. The body is intensely red, and covered by scales which fall off in large quantities. The face is also red, as well as other parts of the body, and the head is affected by profuse dandruff.

Treatment.—The latter forms of the affection are relieved by simple inunction of the skin. The skin should be kept constantly covered with some simple unguent, as vaseline, olive oil, or cocoanut oil. In the severe form of the affection, the same treatment should be employed, with the addition of daily sponging with water as hot as can be borne.

PRURIGO.

This is a disease of the skin characterized by small, hard, pale, or flesh-colored pimples, which, in their earlier stages can be felt under the skin often before they are visible. The eruption is attended by violent itching, and a sensation as of ants crawling upon the skin.

Treatment.—Vapor baths, packs, full baths, hot sponging of the skin, and improvement of the general health.

ELEPHANTIASIS.

There are two varieties of this disease, one known as *elephantiasis arabum*, the other, *elephantiasis Græcorum*. The latter disease is that more commonly known as leprosy. The first mentioned disease consists in a chronic enlargement of some portion of the body. The part most likely to be affected is the leg, which becomes thickened and clumsy, sometimes to such a degree as to render the patient weary of life. The principal seat of the disease seems to be the skin. There is considerable pain in the affected part, the skin of which may be either smooth or ulcerated. Next in frequency to the legs, the genital organs are affected, sometimes attaining an enormous size. The nose is a frequent seat of the disease in spirit drinkers, sometimes attaining mammoth proportions. This disease is sometimes called elephant-leg or barbadoes leg.

In true leprosy, three classes of symptoms appear: 1. Discoloration of the skin, which acquires, in spots, a light coffee hue; 2. A deposit in the skin of tubercles of a dull red color; 3. Loss of sensation in certain parts, particularly in the extremities, due to disease of the trunks.

The thickening of the skin chiefly occurs about the eyebrows, cheeks, forehead, and nose, giving to the patient a very singular appearance. The hands are frequently distorted, the fingers being contracted, giving to them a claw-like appearance. After some years, the tubercles ulcerate, causing gangrene of some parts of the body, especially the fingers and toes. Loathsome odors emanate from the body. This disease is sometimes imported to this country; and Dr. Bulkley, of New York, claims to have observed cases in that city which originated there.

Treatment.—There is little chance for effecting a cure in either of these maladies. In some cases of elephantiasis Arabrum confined to a single part of the body, amputation has been sometimes performed with advantage. Two remedies, one known as gurjun oil, and a more recent one, chaulmoogra, are much used in India for leprosy, and are said to have been effective in curing a number of cases. Improved dietetic and hygienic conditions are especially important in the treatment of leprosy, since it has been found to occur more frequently in badly-fed persons, and those surrounded by unsanitary conditions. The use of salt meats is said to favor the production of the disease, which indicates that all foods of this kind should be avoided as much as possible. A recent writer sugests that the use of partially decomposed flesh, which is common in some portions of the countries where leprosy originates, may be the cause of this dreadful disease.

MEDICINAL ERUPTIONS.

Many medicines occasion eruptions upon the skin. Arsenic produces herpes, hardness of the palms of the hands, eczema, and ugly ulcerations, by contact with the skin. Iodide of potash produces acne. Bromide of potash produces acne and ecthyma. Tar is a cause of comedo and acne. Copaiba occasions terrible itching, and frequently urticaria and vesicular eruptions. Arnica and sulphur both give rise to eczema.

OILY SKIN.

In some persons there is an excessive production of sebacous matter or sebum, due to morbid activity of the fatty glands of the skin. The skin of such persons presents a shiny look. Little beads of oily matter may be seen at the mouths of the glands near the roots of the

hairs. The forehead, nose, and cheeks are most frequently affected. When the scalp is affected, the condition may be indicated by soiling of the pillow. Acne is frequently accompanied by this condition.

Treatment.—The only treatment to be employed is the frequent application of soap. When many of the glands are clogged up, as indicated by the abundance of grubs, the surface should first be thoroughly rubbed with warm oil. Cocoanut or almond oil is the best. After half an hour, the surface should be rubbed with a flannel cloth, thoroughly saturated with soap moistened with warm water, and stretched over the fingers; or a soft sponge may be used. This is best done at night, just before retiring. When the secretion of fat is very profuse, the operation may be repeated two or three times a day.

DRY SKIN.

A condition of deficient secretion of fat is very frequently met with in cases of dyspepsia and in persons suffering with other wasting diseases. The best remedy is the daily application of the oil bath, which should be given according to the directions on page 673.

DANDRUFF OR DANDRIFF.

This is a condition in which branny scales are shed from the scalp in great abundance. It may be due to eczema or pityriasis, as already remarked, or may result from a disorder of the sebaceous glands, and from acne. The latter is the most common cause of the disease. In this form of the affection, the abnormal secretion of the fat glands appears upon the scalp as yellowish scales. This condition is akin to that described under the head of oily skin, being, in fact, a dry form of the same disease. This condition is sometimes present upon the nose and cheeks as well as the scalp. It is often a very annoying complaint. When affecting the scalp, it sooner or later results in loss of the hair. This is not because the dandruff destroys the hair, but because the same disease which causes the dandruff interferes with the nutrition of the hair, thus occasioning its loss. On account of its tendency to produce baldness, the disease should never be neglected. Dandruff is generally occasioned by disorder of the digestion, or some other debilitating disease.

Treatment.—Restore the general health by proper attention to the digestion and general hygiene. For dandruff of the face, apply

the same remedies recommended for the skin. The scalp should also be treated in the same way, by gentle shampooing with ordinary washing soap, once or twice a week. A very soft brush should be used. Neither a stiff brush nor a fine comb should ever be used for removing dandruff. For shampooing, a liniment composed of equal parts of castor-oil and alcohol may be rubbed on the scalp, or an ointment composed of a drachm of tannin to an ounce of vaseline.

MILIA AND WINS.

Milia consists of little globular bodies found just beneath the surface of the skin, chiefly upon the face, in the vicinity of the lower eyelid. They consist of sebaceous follicles, the mouths of which have been entirely closed up, causing an accumulation of sebaceous matter. Wens are milia on a large scale. They occur most frequently on the scalp and face.

Treatment.—Open the top of each little globule with a needle, and squeeze out the contents by pressure between the finger nails or with a watch-key. Wens are to be treated upon the same principle.

EXCESSIVE SWEAT—HYPERIDROSIS.

This is a condition in which the sweat-glands are excessively active. The palms of the hands and feet are most often affected, sometimes to such an extent as to give to these parts a parboiled appearance. Persons troubled with excessive sweating of the feet, generally carry with them a disagreeable odor, due to the perspiration with which the stockings, and even boots or shoes, become saturated.

Treatment.—Take each night and morning an alternate hot and cold foot bath, dipping the feet first into the hot, and then into the cold water, every half minute for fifteen or twenty minutes. Wipe the feet dry, and apply a strong decoction of white-oak bark, or a solution of tannin in water, two drachms to the ounce, or, better still, a solution of tannin and glycerine in the same proportion. The old boots or shoes saturated with perspiration, should be disused, and a new pair purchased. The stockings should be changed every day. Rubbers, and other impervious foot coverings, should not be worn, or should be kept on as short a time as possible. Cloth boots are better than leather, on account of giving the air access to the feet.

OFFENSIVE PERSPIRATION.

This is a condition which is sometimes exceedingly annoying. It is occasioned by the excretion in the sweat of elements of an offensive character. Odors of various kinds are produced. Rheumatic persons are generally most disagreeably affected. The arm-pits are the portions of the body most frequently affected, the offensive odor arising from the feet being due to decomposition of the sweat, and not to the abnormal character of the secretion. This condition is sometimes very difficult to overcome. The best remedy is thorough cleansing of the parts, at least twice a day, with soap and water, or some disinfectant lotion, as permanganate of potash, a solution of chlorinated soda, or with two or three per cent of carbolic acid. Washing the affected part with a solution of chloral, a drachm to the ounce, is a recently recommended remedy. What is known as *Bromidrosis*, is a condition in which the perspiration imparts to the clothing some peculiar color.

ITCHING—PRURITIS.

Itching is due to some form of skin disease when accompanied by an eruption. When not accompanied by eruption it is usually due to some iritating element in the blood, to parasites, to the wearing of flannel under-clothing, or to some disorder of the nerves. Very often an eruption appears where none existed at first, in consequence of scratching. Itching increased at night, and accompanied by a pimple rash in the bend of the arms, front of body, and between the fingers is very suspicious of the itch. Itching about the fork of the thigh is indicative of parasites. Wandering itching at night with no visible eruption in the day time is characteristic of urticaria.

Many persons are greatly troubled with an itching, usually without eruption, on the approach of cold weather. This has been termed *winter pruritis*. In some of these cases little pimples may be seen at the roots of the hairs. This form of itching is due to inactivity of the skin, with a clogged state of the liver in consequence of the excessive use of sweets, fats, and animal food. It is most active in cold weather on account of the lessened activity of the skin at that time. Eczema and other skin affections may be excited by scratching.

Treatment.—Correct diet. Encourage the activity of the liver and bowels by fomentations over those organs. Kneading and percussing the bowels, wet-sheet pack vapor baths, enemas when necessary, and

obedience to all hygienic laws. When there is great irritation, apply saleratus or soda water, a dram to the pint, carbolic-acid ointment, borax-water, and sometimes starch. Anointing with simple vaseline is often effective. For temporary relief, vinegar, lemon juice, and solution of carbonate of soda, a drachm to the pint, are also excellent. Frequently galvanism is very effective in removing intolerable itching, either applied to the affected parts, or to the nerve centers from which the nerve supply is furnished, or to both.

PURPURA—THE PURPLES—LAND SCURVY.

The eruption consists of small round spots or blotches in the skin, bright red at first, soon becoming of a darker hue and then fading after a few days, presenting the various colors seen in a fading bruise. First appears in the legs. A disease known as *purpura hemorrhagica* is a more severe form of the same affection, the amount of blood exuded beneath the skin being very much greater. *Sea scurvy* is an allied disease which is accompained by other symptoms of a grave character. The principal causes of the disease are confinement too closely to animal food, especially salt meat and innutritious food. It is very common among English women who live on strong tea and white bread.

Treatment.—This consists almost exclusively in improvement of the dietary. Tonic baths, massage, and electricity are also useful aids in treatment. The tissues of the legs should be supported by elastic bandages or stockings.

FRECKLES—LENTIGO.

These consist in an increase of the pigment or coloring matter of the skin in small spots. They most often occur in persons who have delicate skins, being greatly increased by exposure to sun and wind, though not produced by them, as is tan. They do not necessarily indicate an inactive state of the liver. Quite eminent authority on lung disease declares that freckles indicate a predisposition to consumption.

Treatment.—Very difficult of removal, and impossible if patient continues exposure. It is better to have the freckles than to forego the valuable influence of the sunshine and fresh air. The advertized lotions and cosmetics are either dangerous or useless. The following are a few of the best-known remedies for the removal of freckles and tan:—

1. Three tablespoonfuls of fresh scraped horse-radish; buttermilk, a pint. Allow to soak six or eight hours, shaking occasionally. Cider vinegar is sometimes used in place of the horse-radish. Apply to the face at night, leaving on till morning.

2. Two tablespoonfuls of lemon juice; an equal quantity of water; a tablespoonful of glycerine; a heaping teaspoonful of powdered borax. Apply three or four times a day, drying after fifteen or twenty minutes with a fluffy towel.

MOTH PATCHES—LIVER SPOTS—CHLOASMA.

The brownish spots of irregular shape and size often seen upon the face, and popularly known as "liver spots," are similar to freckles, but larger in size. They often accompany disease of the liver, and are, not infrequently present in diseases of the womb, which may be due to the fact now well understood that disease of the liver is a not infrequent cause of disease of the womb.

Treatment.—Little or nothing can be done for these blemishes except to improve the general condition as much as possible.

MOTHER'S MARK—MOLE—NÆVUS.

These are of various kinds: 1. Raised brown spots on the face, or moles; 2. Brown spots producing hair; 3. A tumor composed of enlarged blood-vessels, constituting the true "port wine" or "mother's mark." These marks do not originate in ante-natal influences, as many persons suppose. Their origin, is, however, obscure.

Treatment.—Washes and other external applications are of no value. They can only be removed by a surgical operation. Electricity has proved of great service in those cases in which it has been tried.

ALBINISM AND PIEBALD SKIN.

An Albino is an individual whose body is lacking in coloring matter, the pigment being absent. In some individuals this condition is shown in a partial loss of color, producing a spotted appearance. The disease most often occurs in negroes, giving them a very peculiar appearance.

FISH-SKIN DISEASE—ICHTHYOSIS.

In this disease the surface is hard and dry, and is marked off

in such a way as to give the appearance of scales. Patient seldom perspires. Skin often cracks. In slight cases, small patches of brown warty growths appear. When these are abundant, the patient is termed a "porcupine man."

Treatment.—Probably incurable; but the sufferings incident to the disease can be very greatly mitigated by warm, alkaline baths and unguents. Use about three ounces of soda or borax in a full bath tub of water. Bran baths and wet compresses are also useful. Careful attention should be given to the general health.

SCLERODEMA.

A condition in which portions of the skin are hardened and have a hide-bound appearance. The tissues cannot be taken up between the thumb and finger or wrinkled. Often attacks the nape of the neck. The hardened portion, which has a yellowish appearance, may extend over a large area, or be confined to bands. In some cases, the stiffness interferes with the movements of joints and with respiration.

Treatment.—Improve the general health. Soak the affected part in water one or two hours daily, or apply a warm poultice for the same length of time, and after drying, rub well with vaseline, cocoanut or olive oil.

KELOID.

A firm, prominent, pinkish nodule which often appears in a scar from a burn or surgical operation, and sends out processes which contract and pucker the tissues. In a severe case which we met in a city hospital, the growth existed upon the face and produced a hideous deformity. The disease should be let alone. Removal does no good, as it returns.

LUPUS—EATING TETTER.

This disease is characterized by the growth in the skin of tissue similar to that of a healing sore. Its most favorite site is the cheek, near the nose. The affection often appears upon both sides of the face and bridges the nose. After a time ulceration occurs. It is a scrofulous affection.

Treatment.—Removal by means of caustics. The galvano-cautery is the best means to use. The general health must be improved by all hygienic means.

CALLUS.

This is a thickened condition of the epidermis or scarfskin. It is most likely to occur over joints and the prominent points of bones. It is generally produced by prolonged pressure. Its object is the protection of the sensitive parts beneath from injury. A callus does not usually require treatment except when the part becomes inflamed. The proper treatment is soaking in very hot water for fifteen or twenty minutes three or four times a day, and the wearing of a poultice or wet compress the balance of the time.

Corns are modifications of the callus, the treatment of which is deferred to the section on surgery.

ITCH—SCABIEI.

This disease is by no means so frequent in this country as in some others. It is said to constitute about one-fourth of all the cases of skin disease in Glasgow. The disease, as is now well known, is caused by the presence of an animal parasite, the *acarus scabiei*, shown in PLATE VIII. This little insect which is barely visible to the unaided eye, burrows in the skin, making a somewhat crooked channel in which it deposits its eggs (Fig. 339), which in due time are hatched, and rapidly develop into full grown *acari*. The female is the cause of all the mischief, as she alone burrows, the purpose being to deposit the eggs just under the surface of the epidermis. The track left by the insect in burrowing can be readily seen by the aid of a small magnifying glass as a little dotted line about one-fourth of an inch in length. The eruption varies much in different cases, sometimes being very scanty, in other cases resembling a bad case of eczema. It is most often found

Fig. 339.—Female Itch Mite Laying Eggs in a Burrow.

between the fingers, in the bend of the elbows and knees, and upon the front of the body. The itching in some cases is most intolerable, in others slight. It is most severe at night. It is in some cases very difficult to decide whether or not a patient has *scabies* or some other skin disease.

A variety of the disease known as grocer's itch is sometimes produced by the irritation of an insect known as the *acarus sacchari*. PLATE X.

Treatment.—The only efficient remedies are such as will kill the parasites. No internal medication is required. The insects may be destroyed in a variety of ways; by smothering, by drowning, or by poisoning. The itch insect requires air as well as larger animals. If the skin is thickly smeared with mutton tallow or some other unguent of considerable consistency, the unguent being applied at least twice a day for some time, a cure may be effected. Prolonged immersion in water, and daily wet-sheet packs, followed by thorough shampooing, are effective measures if perseveringly employed; but the most expeditious manner of getting rid of the vermin is to apply to the skin some unguent containing substances poisonous to them. The patient should take a thorough soap bath at night, soaking the body for at least an hour in the warm water. If possible, a vapor bath should be taken before the full bath, so as to thoroughly loosen the old epidermis. In the full bath the skin should be thoroughly shampooed with a flesh brush and soft soap. After the bath, the patient should apply to the affected parts of the body and contiguous parts any one of the different ointments given on pages 800 and 801. If sulphur ointment is used, it should be left on over night and worn during the next day if the odor is not very objectionable. The next night the same process should be repeated. Care should be taken to change all the clothing at the beginning of treatment and again at the close. One or two applications are usually sufficient. A third one is only occasionally required. The irritation of the skin may be somewhat aggravated by the treatment. It will subside in a few days under the use of simple vaseline ointment. Some persons make the mistake of keeping up their vigorous treatment so long as there is an eruption. It should be understood that the eruption and the real cause of the disease are two distinct things.

The clothes of a patient who has had treatment for itch should

be thoroughly baked for at least two hours. Clothing will readily withstand a temperature of 350° without scorching.

LICE.

Pediculosis, or lousiness, may result from the infesting of the body by any one of three varieties of the louse insect, or pediculus. They

Fig. 340. The Head Louse.

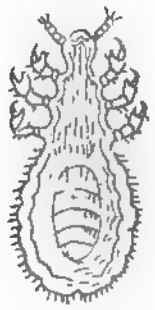


Fig. 341. The Body or Clothes Louse.

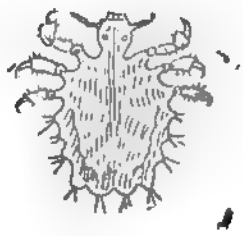


Fig. 342. The Crab or Pubic Louse.

are known respectively, as the *head louse*, the *body* or *clothes louse*, and the *crab louse* or "*crabs*." See Figs. 340, 341 and 342 for representations of these three kinds of lice. Lice multiply very rapidly. A single female will produce in the course of a couple of months 5,000 new individuals. Very frequently an eruption may be seen, which is produced by the irritation of the insect and the scratching of the patient. Head lice deposit their eggs or "nits" upon the hair, as shown in Fig. 343. Sometimes these are the only traces of the insect to be found. These "nits" cling very closely to the hairs to which they are attached until they are destroyed or hatched.

Fig. 343. Nits or Eggs of the Head Louse.

Lice do not usually exist except on persons who are filthy in their personal habits, although the most cleanly individual might become infested by contact with a person who harbored them in large numbers. Very frequently these parasites exist for a long time unsuspected. They can only be detected

by careful scrutiny of the affected parts for the insects or their "nits." Body lice generally deposit their nits in the seams of the garments, and themselves usually cling to the clothing when it is removed.

Treatment.—For head lice, saturate the hair with kerosene oil two or three times a day for two or three days; then wash the head with soap and water. This is not a very agreeable remedy, but is a safe and certain cure. Another remedy is a lotion made by steeping half an ounce of bruised stavesacre seeds in a pint of equal parts of vinegar and alcohol. Wash the head with the solution twice or three times a day for a day or two. The following is another good remedy: Carbolic acid, one drachm; glycerine, one-half ounce; alcohol, one ounce Mix the carbolic acid thoroughly with the alcohol and glycerine, then add four ounces of water. Shake well before using. Must be employed with some caution, but is a good remedy. Bathe the head with it carefully twice or three times a day for two days.

Body lice can usually be cured by changing the clothing, and warm bathing with soap and water. It is better, however, to apply to the skin of the affected parts some parasiticide ointment. The following is excellent: Soak half an ounce of powdered stavesacre in an ounce of hot olive oil for half an hour; add an ounce of vaseline. This ointment is also excellent for head lousiness. It should be well rubbed in.

The crab louse usually affects the hair of the covered portions of the body only. The best remedies are cleanliness, thorough washing with soap, and the application of mercurial ointment. Care should be taken in the use of this ointment, as harm may be done by its absorption into the system. In order to render a small quantity efficient, it is a good plan to clip close to the skin the hair of the affected parts. The ointment should then be applied at night and washed off in the morning, the clothes being changed for new ones, or those which have been freed from the parasites. Kerosene oil, or crude petroleum, may also be used as directed for head lousiness, and is a safer remedy.

In all varieties of lousiness the bed clothing, as well as personal clothing, should be thoroughly boiled, or baked in an oven, as this is the only means of destroying the insects and their eggs. In cases of body lousiness, the seams of the clothing should be ironed with a flat-iron as hot as can be used without scorching. If this plan is not successful, the seams may be saturated with a solution of carbolic acid, twenty drops to the ounce of water.

RINGWORM.

This is a parasitic disease, in which a fungus grows upon the skin. The scalp, the beard, the nails, or the general surface of the body may be affected. In Fig. 344 may be seen the appearance of the fungus under the microscope. Fig. 345 shows an affected hair greatly magnified. The fungus is called, scientifically, *tricophyton tonsurans*. It is a contagious affection.

Fig. 344.—Ringworm Parasite, greatly magnified.

When it occurs on the body, the disease usually spreads in a circle, from which the affection takes its name.

When the scalp is affected, the hair falls in circular spots, upon examination of which numerous short stumps of hairs may be seen, in which respect this disease differs from baldness due to other causes. The affected portions of the scalp present the appearance of the skin of a plucked fowl, and numerous white scales. The disease extends into the hair follicles and the hairs. The affection is quite obstinate, and when it exists for a long time, may occasion permanent baldness. It occurs most often in charitable institutions, where a large number of children are brought together.

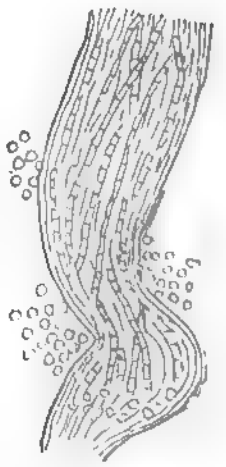


Fig. 345.—A Hair affected by Ringworm.

Ringworm of the beard, or *sycosis*, commonly known as "barber's itch," is a not uncommon malady, but often very obstinate to cure. It rarely occurs except in persons accustomed to be shaved at a barber shop, where the disease is almost always contracted. Not infrequently a very considerable degree of inflammation of the skin of the face is produced, giving rise to nodules, pustules, and various other forms of eruption.

The fingernails are sometimes affected by this disease, as well as other parts, becoming dry, thickened, brittle, and opaque.

Treatment.—When the disease occurs upon the general surface of the body, or upon a part not covered with long hair, it may be readily cured by the application of a solution of carbolic acid made

as follows: Carbolic acid, one drachm; glycerine, one-half ounce; water, two ounces. Apply to the affected parts with a brush, daily, until the disease disappears. A solution of sulphurous acid is also an excellent remedy, made as follows: Burn two or three ounces of sulphur in a tight box, by placing it on the under-side of a hot stove cover, supported by a brick. Place in the box before closing it a shallow earthen vessel filled with water. The water will absorb the smoke arising from the combustion of the sulphur, and will thus become charged with sulphurous acid. Apply as directed for carbolic acid. Ink is a domestic remedy usually successful. Another remedy sometimes used with success, is wearing over the part a penny wet with vinegar.

When the scalp and beard are affected, the hair must be pulled out by means of pincers before the remedy is applied. This is necessitated by the fact that the disease penetrates to the bottom of the hair follicles. The hair thus pulled out always grows again, as the roots are left. Several months' treatment is often necessary to effect a cure in these cases, the same hairs having to be pulled again and again before they remain healthy. The remedy must be applied, and well rubbed in each time, after a portion of the affected hairs have been pulled, and once or twice a day in addition.

FAVUS.

This is another vegetable parasitic disease of the skin. See Fig. 346. Any portion of the skin may suffer, but the scalp is most likely to be affected. The disease is characterized by the formation of yellow crusts, which are depressed at the center, at which a hair may generally be seen. The affection begins in the hair follicles, and extends to the whole skin of the affected part. The crusts are formed almost wholly by the growth of the fungus. They have an odor similar to that of mice, which are also very subject to this disease.

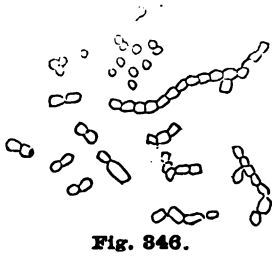


Fig. 346.

Treatment.—This malady is very obstinate, being more difficult of cure than ringworm of the scalp. It requires the same remedies.

TINEA VERSICOLOR.

The old name for this affection is *pityriasis versicolor*. It consists

in an eruption of slightly elevated, irregularly shaped, yellowish, or brownish spots, most often found upon the chest. This is also a parasitic disease. The microscopic appearance of the fungus peculiar to it is shown in Fig. 347. It is often mistaken for "liver spots." It is contagious; may last any length of time.

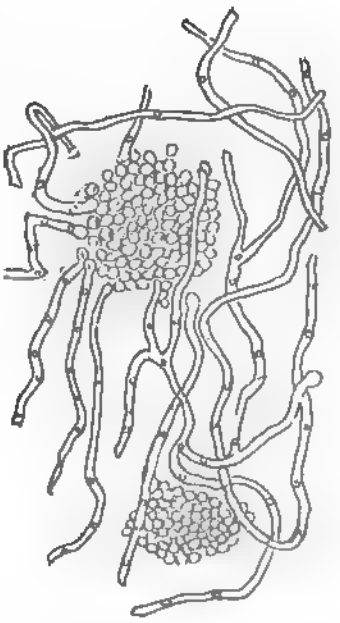


Fig. 347. Parasitic Fungus of Tinea Versicolor.

Treatment.—Wash the parts and the whole body thoroughly every day with soap and water, and then apply any of the remedies recommended for ringworm. It is not difficult of cure; but treatment should be continued for some time after the eruption disappears, in order to insure a permanent cure.

HIRSUTES—OVERGROWTH OF THE HAIR.

This morbid condition consists in an abnormal development of the fine, short hairs. It is most troublesome in ladies, in whom the hair of the upper lip is sometimes sufficiently developed to form a mustache. We recently met a case in which a full silken beard had grown. In Fig. 348 and 349 may be seen two most remarkable examples of hirsutes.

Treatment.—The so-called *depilatores* sold for the relief of this condition are worthless. They do nothing more than to remove the external portion of the hair, only penetrating a short distance into the hair follicle, and hence the hairs soon grow again. Being usually composed chiefly of lime, considerable irritation is not infrequently produced, and sometimes quite severe disease of this portion of the skin. Pulling out the hairs is only temporary in its effects, although more lasting than any depilatory. The only cure is destruction of the root of the hair or its folli-

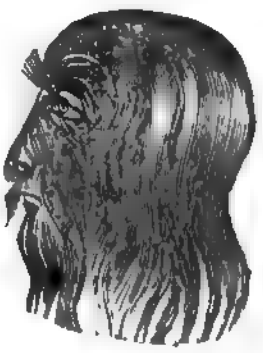


Fig. 348.

cle. This may be accomplished by passing into the follicle a fine glover's needle and twisting it about in such a way as to excite sufficient inflammation to obliterate or close it. Sometimes a heated needle is used for the purpose. The best plan of all is to pass a current of electricity through the needle after it has been inserted into the follicle. Galvanic electricity is necessary for this purpose. The last method of treatment can be employed only by a skillful physician.

Fig. 340.

BALDNESS.

There are two varieties of baldness, the ordinary form, and what is known as "patchy baldness," a form in which the hair is lost only in circumscribed spots. The loss of hair usually begins first at the temples, the forehead, or the crown, gradually extending. It is very common in old age, being the result of the general decline in nutrition which occurs in advanced life. When it occurs in early or middle life, it most commonly results from the disease of the scalp known as dandruff (page 1271). Baldness also results from eczema and from ringworm and favus. Temporary baldness not infrequently follows erysipelatous, typhoid, and other fevers. Baldness may be occasioned by anything which deteriorates the general health. Excessive brain labor, resulting in congestion of the head and too much heat in the scalp, may produce it. It may be the result of dyspepsia, of excesses of various kinds, and of any debilitating disease. Men suffer more than women, which is probably due to the fact that women do not so habitually overheat the head by the constant wearing of warm head coverings. In some cases, the disease is hereditary.

Treatment.—Prevention is the best remedy, as many cases are in-

curable. The scalp should never be overheated. Head coverings should be light, and should allow free access of air to the head at all times. The hair should not be harshly brushed with a stiff brush, and should never be combed with a fine, sharp-toothed comb. This is particularly true if dandruff is present, as the measures referred to will certainly aggravate the difficulty. When the hair is very dry, a little fine unguent of some kind may be employed; but the common practice of "greasing" the hair is a bad one. Such harsh mixtures as are often employed by barbers in shampooing are very harmful to the hair. Soap should be rarely used unless of the finest quality, but the head should be kept clean by frequent washing with warm water, shampooing with the white of egg, followed by thorough rinsing.

When the scalp is smooth and shiny, especially in cases of "patchy baldness," which is due to nervous disease of the scalp, little can be expected from treatment. If a large number of hairs are still present, however, even though they are very short and thin, something may be done. The case is much more hopeful in young than in old persons. When hereditary, little can be expected from treatment. First attention should be given to the general health. The various stimulating lotions which are advertised for this purpose should be carefully avoided, as they will be rarely successful, and may do much harm. No amount of stimulation of the scalp will effect more than temporary benefit unless the general nutritive forces of the patient are also improved by attention to hygiene.

It is rarely necessary to cut the hair close, and shaving the scalp is quite unnecessary. If the scalp is dry, a little fine oil should be rubbed upon it daily with much gentle friction. If dandruff is present, treat as directed on page 1271. If the case is obstinate, consult a physician.

GRAY HAIR—CANITIES.

Loss of color of the hair is due to a failure of the papillæ to secrete the usual amount of coloring matter. A hair rarely loses its color; hence grayness, or loss of color, begins at the root of the hair.

Treatment.—There is no remedy but dyeing, and that is by no means always safe, since all the popular hair dyes contain lead or some other substance of a poisonous nature. Cases of lead poisoning from the use of hair dyes are by no means uncommon. The following

hair dye is recommended by the eminent Professor Hager which may be used with perfect safety: Subnitrate of bismuth, one ounce; glycerine, fifteen ounces. Heat together in a water-bath for an hour. Add carefully a strong solution of caustic potash, while stirring the solution, until it becomes clear. Then add a very strong solution of citric acid until the test paper shows the mixture to be nearly neutral. Add sufficient rose or orange-flower water to make two pints. Color slightly with aniline, as desired.

DISEASES OF THE MALE GENERATIVE ORGANS.

INFLAMMATION OF THE PROSTATE GLAND—PROSTATITIS.

SYMPTOMS.—Pain and heat in the fork of the thighs, with tenderness on pressure; pain increased by urination, and by moving of the bowels; bearing down feeling in the bladder and the rectum; a hard slight swelling felt in the fork of the thighs and rectum; may be retention of urine.

Causes.—May result from taking cold, from sexual excesses, from the use of diuretics, and from disease of the rectum. The most common cause is gonorrhœa, or clap

Treatment.—Hot fomentations to the perinæum; hot enemas three or four times a day or frequent cold enemas. When inflammation is high, as indicated by severe throbbing pain, cold enemas should be retained as long as possible. The patient should have a very simple diet, should take no meat, eggs, or condiments of any kind. Alcoholic liquors of all sorts should also be carefully avoided. The patient should maintain perfect quiet in bed so as to lessen the danger of permanent injury.

ENLARGEMENT OF THE PROSTATE.

SYMPTOMS.—Hard lump to be felt in the fork of the thighs, or rectum, at the base of the bladder, which is sensitive to pressure; slow, difficult, and painful urination; in many cases, symptoms of bladder disease.

The body situated at the base of the bladder, the so-called prostate gland, is now well understood to be not a gland at all, but a mass of muscular fibres which surround the seminal ducts and by contraction expel the seminal fluid. When often stimulated to contraction by excessive sexual indulgence or by self-abuse, hypertrophy, or overgrowth of the muscular body, takes place. Enlargement may also result from inflammation. It is a very common disease in old men, to whom it occasions very great inconvenience by producing painful and difficult urination, and in some cases actual retention, making the use of the catheter necessary. It is a difficulty which is often neglected, very much to the detriment of the patient.

Treatment.—Free water-drinking, careful avoidance of alcoholic

liquors, strong tea and coffee, tobacco, the use of condiments and stimulating foods of all kinds, and a diet consisting chiefly of fruits and grains, are the principal hygienic measures to be adopted in this disease. Hot fomentations applied to the perinæum daily, together with injections of hot water into the rectum in quantities from a pint to a quart, are the best means for diminishing the hardness and enlargement. The water employed for the injection should be as hot as the patient can bear; and the temperature may be 102° to 106° at first, and increased to 110° if possible; a prolonged hot spray to the perinæum is still more effective than fomentations. The spray may be employed with hot and cold alternations with good effect. If the trouble is not relieved quite promptly by the simple means suggested, the case should be brought to the attention of a skillful surgeon.

BALANITIS.

SYMPTOMS.—Heat and itching at the end of the penis; a creamy discharge; red and raw patches on the surface of the mucous membrane.

Causes.—The principal cause of this disease is lack of proper cleanliness. It occurs most frequently in persons having a long or tight foreskin; the disease corresponds to vulvitis in females; it is also occasioned by mechanical irritation and by gonorrhœa.

Treatment.—Careful washing and drying the affected parts three or four times a day will speedily effect a cure in the majority of cases. If there is considerable swelling, a cold compress should be applied continually. If the disease is somewhat obstinate, a solution of alum or sulphate of zinc, in the proportion of a grain or two to an ounce of water, may be applied once a day. The cure will also be facilitated by the use of carbolic acid ointment made by mixing ten drops of carbolic acid with an ounce of vaseline. For a radical cure, circumcision, or an equivalent surgical operation, is necessary.

CATARRH OF THE URETHRA—URETHRITIS.

SYMPTOMS.—Swelling and redness at the external end of the urethra; burning along the urethral canal, especially during urination; slight mucous discharge before or after urination; sticking together of the lips of the mouth of urethra.

This disease often occasions great anxiety and serious trouble from its similarity to a slight attack of gonorrhœa.

Causes.—Irritation of the urethra by foreign bodies, as by the

awkward use of the sound or catheter, or by irritating injections into the urethra; sexual excesses, especially self-abuse; very frequent nocturnal emissions; coitus during menstruation.

Treatment.—This disease generally recovers of itself within a few days, though it sometimes continues for several weeks, especially when the anxiety of the patient leads him to frequently squeeze or press the organ to ascertain the presence of the discharge. Cool sitz baths and local douches should be daily employed. If there is considerable pain, the hot douche or spray is the best means of relief. Sexual indulgence should be entirely abstained from. The patient should avoid condiments, tea, coffee, tobacco, alcoholic liquors, and all other irritating causes.

Gonorrhœa.—This disease does not differ from the preceding except in its contagious character and greater severity. The treatment of the disease consists in complete rest in bed for a few days, avoidance of exposure to cold, and the same measures as recommended for simple catarrh of the urethra. Severe cases require the attention of a physician. The results of neglected or badly treated gonorrhœa are sometimes most serious and life-long in character.

PRIAPISM.

SYMPTOM.—Constant and often painful erection.

This condition is almost the invariable result of sexual excess of some sort; it frequently results from masturbation, the direct cause being the irritation produced by too frequent local excitement. Priapism often accompanies disease of the brain and nervous system.

Treatment.—In cases in which it does not arise from the causes last mentioned, one of the most essential elements of treatment is mental control. Indulgence in sensual thoughts is one of the most common causes of this humiliating disease. The best means of local treatment are the local application of cold to the affected part, and hot fomentions applied to the sacrum. If the local application of cold is not effective, relief may sometimes be obtained by the hot douche or spray taken at as great a heat as can be given without injuring the tissues.

INFLAMMATION OF THE TESTICLE.

SYMPTOMS.—Pain and sensation of weight in the testicle; pain extending up the cord; uneasiness in the lower part of the back and the groin; swelling of the testicle; scrotum full and tense; cord swollen and sensitive to pressure; slight fever; frequent urination; constipation; nausea and vomiting.

This disease is generally caused by dissipation or by the extension of a gonorrheal inflammation from the penis to the testicle.

Treatment.—Rest in bed with fomentations to the affected part are the best measures for relieving pain; some surgeons advise the application of adhesive straps in such a manner as to compress the inflamed testicle. This seems to us to be an unnecessary procedure, as the same results can be obtained without, and with less pain to the patient and no risk of injury. The bowels should be well kept open by enemas. In case the patient should have much fever, cool sponge baths, and perhaps wet-sheet packs, should be employed. The testicles should be supported by a suspensory bag for some time after the acuteness of the inflammation has subsided, in order to prevent a relapse and to prevent the disease from becoming chronic.

NOCTURNAL EMISSIONS—SEMINAL LOSSES—EXHAUSTED VITALITY.

Seminal emissions occurring during sleep, usually accompanied by erotic dreams, are known as nocturnal or night pollutions, losses, or emissions. In addition to its characteristic feature, the disease is often accompanied by a long train of symptoms which are intimately connected with the local affection, or grow out of the debility arising from the continual drain upon the system, for a full account of which the reader is referred to the author's work entitled, "Plain Facts for Old and Young."

This disease is usually the result of self-abuse, but may result from sexual excesses of any kind. It is common in married men who have abused the marriage relation, when they are forced to temporary continence from any cause. It also occurs in those addicted to mental unchastity, though they may be physically continent. It is not probable that it would ever occur in a person who had been strictly continent and had not allowed his mind to dwell upon libidinous imaginations. In many cases such a condition of weakness and local debility is reached that an emission is produced by the slightest excitement. Mere proximity to a female, or the thought of one, may be sufficient to produce a pollution, attended by voluptuous sensations. But after a time the organs become so diseased and irritable that the slightest mechanical irritation, as friction of the clothing, the sitting posture, or riding horseback, will produce a discharge which may or may not be attended by sensation of any kind. Frequently a burning or more or less painful

sensation occurs; erection does not take place. Even straining at stool will produce the discharge, or violent efforts to retain the feces when there is unnatural looseness.

Treatment.—In cases in which the disease is of short duration, a cure can generally be affected quite readily; in those of longer standing, the task is more difficult, but still the prospect of recovery is very favorable, provided the co-operation of the patient can be secured; without this, little can be done. But in these cases the patient may as well be told at the outset that the task of undoing the evil work of years of sin is no easy matter. It can only be accomplished by determined effort, by steady perseverance in right doing, and in the application of necessary remedies. Those who have long practiced secret vice or other sexual excesses, or long suffered severely from the effects of sexual transgression, have received an injury which will inevitably be life-long to a greater or lesser extent in spite of all that can be done for them. In such cases, a cure consists in reducing the frequency of the emissions so that the general health will not suffer, which point is generally reached when an emission occurs but once in four to six weeks.

In the attempt to cure this disease, the thing of first importance is that the patient should obtain command of his thoughts; by this means, he can do more for himself than all the doctors can do for him. "But I cannot control my thoughts," says the patient. A young man said to me, "O doctor, you don't know how I feel. I despise myself; I hate myself; I often feel inclined to kill myself. My mind is always full of abominable images; my thoughts run away with me and I cannot help myself." The tears ran down his face in streams as he told me of his slavery. All possible means must be employed to attract the patient's attention from himself, from brooding over his ills. Occupy him, interest him, or teach him to occupy and interest himself. The enthusiastic study of some one of the natural sciences is a most excellent auxiliary in effecting this.

Daily exercise should be taken to the extent of fatigue. It is better that those who are still strong enough should have some regular employment which will require exercise. Those who prefer may secure exercise and recreation in the pursuit of some study that involves necessary physical exertion; as, botany, geology, or entomology. The collecting of natural-history specimens is one of the most pleasant diversions, and may be made very useful as well. No single form of exercise

is so excellent as walking. Four or five miles a day are none too many to secure a proper amount of muscular exercise. Gymnastics, the "health-lift," "Indian clubs," "dumb-bells," rowing, and other forms of exercise are all good; but none of them should be carried to excess. Ball-playing is likely to be made a source of injury by exciting, in vigorous competition, too violent and spasmodic action.

Careful regulation of the diet is a matter of paramount importance. The science of physiology teaches that our very thoughts are born of what we eat. A patient that lives on pork, fine-flour bread, rich pies and cakes, and condiments, drinks tea and coffee and uses tobacco, can make no permanent improvement without reformation. The food must be simple and unstimulating. Much flesh-meat, condiments, tea, coffee, beer, tobacco, and all stimulants must be strictly avoided. It is better for the patient to eat but twice a day, and never later than three or four hours before bed-time.

Sufficient sleep should be taken, but dozing must be avoided. Never go to bed with the bowels or bladder loaded. The bladder should be emptied just before retiring. It is also a good plan to form the habit of rising once or twice during the night to urinate. The position in sleeping is of some importance. Sleeping upon the back or upon the abdomen favors the occurrence of emissions; hence, it is preferable to sleep on one side.

Various devices are employed, sometimes with advantage, to prevent the patient from turning upon his back while asleep. The most simple is that recommended by Acton, and consists in tying a knot in the middle of a towel, and then fastening the towel about the body in such a way that the knot will come upon the small of the back. The unpleasant sensations arising from pressure of the knot, if the sleeper turn upon his back, will often serve as a complete preventive. Others fasten a piece of wood upon the back for a similar purpose. Still others practice tying one hand to the bed-post. None of these remedies should be depended upon, but they may be tried in connection with other means of treatment. Soft beds and pillows must be carefully avoided. Feather-beds should not be employed when possible to find a harder bed; the floor, with a single folded blanket beneath the sleeper would be preferable. Soft pillows heat the head, as soft beds produce heat in other parts. A hair mattress, or a bed of corn husks, oat straw, or excelsior —covered with two or three blankets or a quilted cotton mattress— makes a very healthy and comfortable bed. Too many covers should

be avoided with equal care. The thinnest possible covering in summer, and the lightest consistent with comfort in winter, should be the rule.

As a curative means, the cool or cold sitz bath is one of the most efficacious of all remedies. It should be taken daily, and may often be repeated, with benefit, several times a day. Its effect is to relieve the local congestion, and thus allay the irritability of the affected parts. When but one bath is taken daily, it should be just before retiring at night. Other methods of treatment are described in our work devoted to this subject.*

Drugs are usually of little value, as the most they can do, at least in the great majority of cases, is to temporarily check the disease. Permanent recovery demands the strictest attention to improved hygiene. The employment of rings, pessaries, and numerous other mechanical devices for preventing emissions, is usually futile. No dependence can be placed upon them. Some of these contrivances are very ingenious, but they are all worthless, and time and money spent upon them are thrown away.

In conclusion, we would say to those who may have the misfortune to be suffering in this manner, Never consult a quack. The newspapers abound with lying advertisements of remedies for diseases of this character. Do not waste time and money in corresponding with the ignorant, unprincipled charlatans who make such false pretensions. Do not consult traveling doctors. Physicians of real merit have plenty of business at home. They are not obliged to go abroad in order to secure practice. Persons who resort to this course are, without exception, pretentious quacks. Consult only some well-known and reliable physician in whom you have confidence. It is far better to consult your family physician than to trust yourself in the hands of some one whom you do not know, and especially one who makes great pretensions to knowledge.

Treatment of Self-Abuse.—The method adopted must differ according to the age of the individual patient. In children, especially those who have recently acquired the habit, it can be broken up by admonishing them of its sinfulness, and portraying in vivid colors its terrible results, if the child is old enough to comprehend such admonitions. In addition to faithful warnings, the attention of the child should be fully occupied by work, study, or pleasant recreation. He should not

* "Plain Facts for Old and Young."

be left alone at any time, lest he yield to temptation. Work is an excellent remedy; work that will really make him very tired, so that when he goes to bed he will have no disposition to defile himself. It is best to place such a child under the care of a faithful person of older years, whose special duty it shall be to watch him night and day until the habit is thoroughly overcome.

In younger children with whom moral considerations will have no particular weight, other devices may be used. Bandaging the parts has been practiced with success. Tying the hands is also successful in some cases; but this will not always succeed, for they will often contrive to continue the habit in other ways, as by working the limbs, or lying upon the abdomen. Covering the organs with a cage has been practiced with entire success. A remedy which is almost always successful in small boys is circumcision, especially when there is any degree of phimosis. The operation should be performed by the surgeon without administering an anæsthetic, as the brief pain attending the operation will have a salutary effect upon the mind, especially if it be connected with the idea of punishment, as it may well be in some cases. The soreness which continues for several weeks interrupts the practice, and if it had not previously become too firmly fixed, it may be forgotten and not resumed. If any attempt is made to watch the child, he should be so carefully surrounded by vigilance that he cannot possibly transgress without detection. If he is only partially watched, he soon learns to elude observation, and thus the effect is only to make him cunning in his vice.

In adults, or youths, a different plan must be pursued. In these cases, moral considerations, and the inevitable consequences to health of body and mind, are the chief influences by which a reform is to be effected, if at all. These considerations may be urged with all possible eloquence and earnestness, but should not be exaggerated. The truth is terrible enough. If there are any special influences which may be brought to bear upon a particular individual,—and there always will be something of this sort owing to peculiarities of temperament or circumstances,—these should be promptly employed and applied in such a manner as to secure for them their full bearing. But after all, the most must be done by the individual himself.

SPERMATORRHŒA.

This is really an advanced stage of the preceding disease in which

seminal losses occur without the knowledge of the patient, as when straining at stool, or by passing off in the urine. It is almost invariably accompanied by an extreme degree of irritability of the urethra near the base of the bladder. The seminal fluid escapes in some cases just after urination in the form of a few whitish drops. It must not be supposed, however, that a discharge of this kind is always of a seminal character, as it is more often simply mucus. The real character of the discharge can be determined only by a careful microscopical examination.

Treatment.—All that the patient can do for himself has been indicated under the preceding disease. Cases of this kind require the attention of a skillful physician.

IMPOTENCE.

Impotence, or a lack of sexual power, may be due to a great variety of causes, among the chief of which are sexual excess, particularly self-abuse, mental influences, the use of liquor, opium, and particularly the use of tobacco. The influence of tobacco in producing this condition has been long suspected, and is now well recognized by many physicians. At a late meeting of the British Medical Association several eminent physicians reported several cases of impotence in which the disease was undoubtedly the result of tobacco-using. The first effect of the drug is to excite the sexual organs; the ultimate result of this morbid excitement as stated, is partial or entire loss of sexual power.

Treatment.—When impotence is the result of long-continued sexual abuse, complete recovery is impossible; though even in the majority of these cases at least partial improvement can be secured. When the impotence is accompanied by nocturnal emissions or spermatorrhœa, these affections must of course be cured before sexual power can be regained. Treatment that is good for one of these conditions is also the best for the other. The patient should abstain from the use of all narcotics and stimulants, including tea, coffee, strong spices and other condiments, as well as tobacco and alcoholic liquors. It is necessary that he also refrain from any attempt to exercise the sexual functions, and to avoid sexual excitement of all kinds. Every possible measure should be adopted for improving the condition of the general health. In addition, the alternate hot and cold douche or spray should be applied to the parts daily. Two or three times a week a local application of electricity should

be made. The latter measure is one of the best means of treatment we have ever employed. We have found the last-named remedy to be very essential in the treatment of bad cases of impotence. When this condition arises from moral influences, as lack of confidence, the remedy consists in the removal of the causes so far as possible by appropriate mental and moral treatment.

STERILITY.

This condition may arise from a great variety of causes, among which may be mentioned various diseases, as diabetes, Bright s disease, dyspepsia, consumption, as well as disease of the testicles, including varicocele and various tumors to which the organ is subject. In some cases sterility is due to obstruction of the seminal ducts, which may arise from stricture of the ducts from inflammation or failure of the testicles to descend from the abdominal cavity to the scrotum. The use of tobacco, opium, and alcoholic drinks, should also be recognized as causes of sterility. All of these drugs destroy the vitality of the spermatozoa, the essential elements of the seminal fluid.

Treatment.—The treatment of this condition wholly depends upon the cause. When this is of such a nature that it can be removed, recovery may take place. Cases in which there is permanent closure of the spermatic cord are usually incurable. Real sterility is, fortunately, a very rare affection in men, though by no means so uncommon in women.

NEURALGIA OF THE TESTICLE.

Under this head are included two conditions, in one of which there is unnatural sensitiveness to touch or pressure, and the other in which there is constant pain of a neuralgic character, sometimes very distressing. The pain is most often of a dull, aching character, and frequently extends up the cord to the body. In some cases the neuralgic pains extend to the inner portion of the thigh, upon the side in which the disease exists. It may originate from any one of the following causes: self-abuse and other sexual vices and excesses, disease of the prostate, inflammation of the testicle, acid urine, dyspepsia, gout, varicocele. The last-named disease is almost invariably accompanied by neuralgia.

Treatment.—Recovery will generally take place quite speedily when the causes of the disease are removed. The pain is generally relieved by local applications of cold. Cold applications to the lower part of the back are especially useful and should be employed in the form of

an ice-pack, and may be used from one to three hours a day according to the urgency of the case. Applications of dry heat or of the hot spray will also be found useful in relieving local pain.

TUMORS OF THE TESTICLE.

The testicles are subject to fibrous and cancerous growths, as well as various other kinds of tumors. The only remedy to be recommended in these cases is removal of the affected organ.

SYPHILIS—POX.

Of the three forms of venereal disease, this is of vastly greater consequence than either of the other two, gonorrhœa and chancroid, since this is a constitutional affection, while they are purely local in character.

The symptoms of this disease are too numerous for full consideration here, and we can only notice some of the chief features of the disease. It has three distinct stages. The first is a local manifestation, known as *chancre.* Two or three weeks, or longer, after exposure, a small, hard, reddish pimple makes its appearance, usually upon the genitals, although cases have occurred in which the disease was contracted by kissing, when the chancre was formed upon the lip. The pimple increases in size for a few days, and finally ulcerates, and discharges slightly. It does not usually give much inconvenience, and is, in fact, not infrequently unnoticed. In this respect the chancre differs much from the chancroid, a very important distinction. After a few days the glands of the groins become somewhat enlarged, although not very painful. After one to three months the secondary stage of the disease appears, as an eruption of red spots, which are followed by pimples. After a time, larger pimples or pustules make their appearance, leaving behind them pock marks like those of small-pox. Ulcers also appear in some cases. Simultaneously with the occurrence of the eruption, slightly raised spots of a whitish color, known as *mucous patches,* appear on the mucous membrane of the lips and tongue. A slight discharge arises from these patches, which is of a very contagious character. The patient also has sore throat, and often sore eyes; and after the general health has become considerably impaired, suffers greatly with pains in the head, arms, legs, breast, and particularly in the joints, though the pain is not confined

to them as in rheumatism. Small swellings, known as *nodes*, which are tender on pressure, appear on the shins and other parts.

The above symptoms disappear after a few weeks, and the patient may seem to be well for several months or years; but unless the disease has been properly treated, it is all the time at work in the system, and next makes its appearance in the deeper tissues, particularly in the bones and cartilages of the nose and skull. Not infrequently the nose is greatly disfigured, or even wholly destroyed. The liver, lungs, kidneys, heart, and other internal organs, are also likely to be affected. No other disease makes such fearful ravages in the human constitution as this.

Treatment.—There is a great difference of opinion among physicians concerning the treatment and the curability of this disease. The eminent Prof. Van Buren, of New York, who has had a very extensive experience in the treatment of this affection, stated in our hearing, a few years ago, that he never dared to assure a patient that he was well, no matter how completely free from disease he might seem to be. Others claim to be able to effect a cure in nearly all cases. Mercury has been looked upon as the great antidote for syphilis; but as shown elsewhere (see pages 764–6), there are grounds for doubting the efficacy of this drug. According to Prof. Hughes Bennett, M. D., F. R. S. E., President of the Royal Medical Society of Edinburgh, the mercurial treatment is being rapidly superseded by the "simple" method, which consists in careful regulation of all the habits of the patient, good hygiene, avoidance of spices, condiments, meat, and all stimulating foods, and the use of tepid baths and other eliminative treatment. Two or three full baths may be taken daily with advantage, unless the patient is very weak. The vapor, hot-air, Turkish, and Russian baths are also useful. The wet-sheet pack is a very admirable remedy. Fomentations and tepid compresses should be applied to irritable parts. The patient should drink from one to two quarts of water daily. By these means the poison may be eliminated from the system; while by the mercurial treatment, according to Dr. Bennett and several other eminent German physicians, the mercurial treatment only checks the manifestation of the disease, thus merely delaying the expulsion of the poison from the system. With reference to the success of this mode of treatment, Dr. Bennett remarks: "More than eighty thousand cases have been submitted to experi-

ment, by means of which it has been perfectly established that syphilis is cured in a shorter time, and with less probability of producing secondary syphilis, by the simple than by the mercurial method." The same author further remarks: "The intensity of the disease in modern times has declined exactly in proportion as its treatment by mercury has diminished, and the disorder been left to follow its natural course. When we treat syphilis on the same principles that we do scarlatina and small-pox, it will prove infinitely less fatal than those disorders."

In order to be effectual, the treatment must be continued for months after the symptoms of the disease have disappeared, as the malady may appear even after the lapse of many years, and if not in the lifetime of the transgressor, may appear in his posterity.

CHANCROID.

This is a painful ulcer or sore, which secretes a contagious matter, usually appearing upon the genitals within a few days after exposure. If not properly treated, these sores often last several months. There may be several present at the same time. In many cases, a painful swelling occurs in the groin, on one side or on both, from enlargement of the glands in this region. The swelling may disappear by absorption, or suppurate and form an abscess. This form of venereal disease does not give rise to constitutional symptoms.

Treatment.—Keep the sore clean, employ a restricted diet, practice absolute continence, and refrain from active exercise for a few days. Meat, stimulants, spices, and tobacco, should be carefully avoided. The specific poison may be destroyed by touching the sore with a strong caustic of some sort.

DISEASES OF WOMEN.

A remarkable increase in the number and frequency of that large class of maladies known as diseases peculiar to women, has attracted the attention of many observing physicians. The fact has received many different explanations. One author attributes the difficulty to faulty methods of education, particularly the attempt of young women to compete with their brothers in the study of the classics and the higher mathematics. Another, adducing the fact that American women seem to suffer more than those of any other nation, finds an explanation in the asserted fact "that all animals tend to deteriorate in this country" No reason is offered why America should not be as healthy a country as any other upon the globe, but attention is called to the fact that numerous classes of people have occupied the territory in succession, from which it is argued that no race can long continue an existence here without degeneration; thus placing the responsibility wholly upon nature and removing it from the shoulders of those who, according to our view, are only suffering the consequences of their own transgression of nature's laws, combined with inherited weaknesses and morbid tendencies.

We have become satisfied from the somewhat extended opportunities of observation which we have enjoyed, that the cause of the increased frequency of diseases pecuiar to the female sex are more directly attributable to bad habits of dress, diet, and unnatural and injurious personal and social habits of various sorts, than to any other causes. We cannot conceive it to be possible for a woman to dress in accordance with the requirements of fashion for any length of time, without becoming seriously diseased in the functions peculiar to her sex.

The process of perversion which finally results in serious diseases begins at a very early period. In the words of the eminent Prof Emmett, who stands foremost in the ranks of specialists in the treatment of this class of diseases, ' at the very dawn of womanhood the young girl begins to live an artificial life, utterly inconsistent with the normal development. The girl of the period is made a woman before her time by associating too much with her elders, and in diet, dress, habits, an

tastes, she becomes at an early age but a reflection of her elder sisters. She may have acquired every accomplishment, and yet will have been kept in ignorance of the simplest feature of her organization, and of the requirements for the preservation of her health. Her bloom is often as transient as that of the hot-house plant, where the flower has been forced by cultivation to an excess of development, by stunting the growth of its branches, and limiting the spread of its roots. A girl is scarcely in her teens before custom requires a change in her dress. Her shoulder-straps and buttons are given up for a number of strings about her waist, and the additional weight of an increased length of skirt is added. She is unable to take the proper kind or necessary amount of exercise even if she were not taught that it would be unladylike to make the attempt. Her waist is drawn into a shape little adapted to accommodate the organs placed there, and as the abdominal and spinal muscles are seldom brought into play, they become atrophied. The viscera are thus compressed and displaced, and as the full play of the abdominal wall and the descent of the diaphragm are interfered with, the venous blood is hindered in its return to the heart."

Although mothers have been repeatedly warned of the danger of thus allowing their daughters to sap the very foundation of their life in early womanhood, it is rare indeed that a mother can be found who has the moral courage to stand up against the tide of public opinion and bravely refuse to bow to the mandates of fashion. Health, happiness, usefulness, comfort, are all sacrificed upon the throne of the fickle goddess to whom so many thousands pay an onerous but willing homage. So long as this strangely inconsistent course is persisted in, woman will continue to be the chief supporter of the medical fraternity, whose skill and ingenuity are taxed to the utmost in devising means for the relief of her multitudinous and painful ills; at least three-fourths of which might be easily avoided by better attention to the laws which govern her sexual nature.

Among other general causes of disease in woman may be mentioned novel reading, an evil habit indulged in by a very large proportion of the young ladies of the present day, and the result of which is the development of a weak sentimentalism, and the production of nervousness, hysteria, and a long list of maladies which depend largely upon morbid mental states.

Another very frequent cause which should be mentioned in this connection, is carelessness at the menstrual period. Few women, at least

in early life, exercise that care at this time that is absolutely necessary to avoid incurring danger of producing serious disease. Young women attend parties, concerts, balls, and various entertainments in all sorts of weather, and without proper attention to protection by suitable clothing, irrespective of the menstrual function, the consequence of which is the contraction of colds at this susceptible period, and the establishment of various irregularities which lay the foundation for serious diseases in future years. There is no doubt but that a large share of the chronic diseases from which women suffer the most, have their first beginnings in exposure at the beginning of sexual activity. The greatest care should be exercised at the time of the establishment of the menstrual flow on this account. At least twenty-four hours' rest should be taken before the time for the period to begin. The most of the time during the period should be spent in bed. No violent physical or mental exertion should be indulged in at this time. Women of barbarous nations, and robust young women who have from early childhood been accustomed to active muscular labor, perhaps do not require to observe quite so great precaution; but the average girl of the present day needs just this sort of care. Mothers are generally very remiss in their duty in not watching carefully over their daughters at this period, giving them proper instruction and restraining them from taking such a course as must result in positive and often life-long injury.

Another active cause in the production of local diseases in women is habitual neglect of the bowels. The great majority of women, young, old, and middle-aged, suffer with constipation of the bowels. In a majority of cases this is largely the result of neglect to attend promptly to the calls of nature. By degrees, the bowels lose their natural sensibility, and become torpid and inactive; the immediate result of this is congestion of all the organs of the pelvis, the uterus and ovaries with the rest, and sooner or later the symptoms of disease of these organs make their appearance.

Lastly, we must mention sexual abuses of various sorts as among the most positive sources of serious local disease in females as well as in the opposite sex. Probably this cause, especially secret vice among young women, does not prevail to such a universal extent as it does among boys and young men; but evidences are too convincing to be ignored that cases are by no means rare in which this is an active cause. Among married women, sexual excesses, for which they are not wholly or often chiefly responsible, give rise to a very large share of the

maladies from which they suffer. This subject has been quite fully treated under the head of sexual physiology and hygiene.

In concluding these introductory remarks, we would earnestly invite the reader's special attention to the paramount importance of attending seriously and promptly to the first evidences of the maladies to which this section is devoted. Nearly all this class of diseases, although very chronic and obstinate when thoroughly developed, are readily controlled by proper and efficient treatment at the outset. False modesty often restrains the sufferer from making known her condition to a competent medical adviser until it has existed so long that a cure can only be accomplished by long-continued and persevering efforts. When apprized of this fact, the unfortunate individual often gives up in discouragement. In far too many instances when this is not the case, the patient has the misfortune to fall into the hands of some physician who blindly follows obsolete or routine methods of treatment, perhaps doing the best he knows how, but notwithstanding, in no way benefiting the patient even after years of treatment. In scores of instances, patients of this kind have come to us in utter despair, having lost all faith in all methods of treatment, and given up all hope of recovering health. The treatment of this class of disease, or "female weaknesses," as they are termed by the advertising charlatan, is one of the most lucrative sources of revenue to quacks of every description. Not hesitating to promise the most marvelous results within a short space of time, they excite the hopes of their victims only to leave them deeper than ever in the slough of despond. A person who has been thus imposed upon a few times, is generally in about as wretched a condition, both physically and mentally, as an individual can well be. It is partly for the purpose of rendering sufferers from this class of diseases sufficiently intelligent upon the subject of their ailments to enable them to discriminate between the competent and reliable physician and the ignorant pretender, that this section is written. Another object in its preparation which we may mention in conclusion, is to inspire those of this large class of sufferers into whose hands this work may fall with hope and courage, by the assurance that there are rational and successful methods of treatment which will reach almost every case, no matter how chronic or how apparently hopeless it may be, provided they are skillfully adapted to each particular case and faithfully administered.

INFLAMMATION OF THE OVARY.

SYMPTOMS.—Sudden pain in one or both groins, sometimes extending down the leg and the feet; often pain in the breast and the affected side; increase of pain during menstruation; tenderness on pressure; pain in moving the bowels; general distress; nausea; more or less fever.

This disease most frequently results from taking cold during menstruation, from injury, and from the infection of gonorrhœa. In many instances innocent wives have suffered from inflammations which have rendered them barren and invalids for life by the last-named cause contracted from incontinent husbands.

Treatment.—Rest, fomentations to the affected part, hot vaginal douches two or three times a day, and especially the hot enema taken once or twice a day and retained for half an hour or as long as possible. The patient should remain perfectly quiet in bed, and should not attempt to get upon her feet or walk about for some time, or until the local irritation is almost wholly subdued.

CONGESTION OF THE OVARY—OVARIAN IRRITATION.

SYMPTOMS.—Tenderness in the groin; pain in standing or walking; more or less continuous pain, aggravated at the menstrual period, which is generally ushered in by a chill followed by a fever resembling that of ovarian inflammation.

This condition is frequently called chronic inflammation of the ovary, and is often accompanied by enlargement of the organ which in consequence of some sudden jar or unusual strain becomes dislocated or prolapsed. Ovarian irritation often produces a reflex effect upon the system. It is a frequent cause of obstinate dyspepsia, especially of the nervous form, accompanied by spinal irritation, by painful headaches, and in some cases of serious mental disease really amounting to insanity.

Causes.—Among the chief causes may be mentioned improper dress, taking cold at the menstrual period, disappointment, induced abortion, the use of "preventives," constipation, the opium habit, prostration, and self-abuse.

Treatment.—The patient should be given the advantage of as good hygienic surroundings as possible. Sun baths, massage, complete rest at the menstrual period, daily fomentations over the affected parts, the daily use of the hot vaginal douche, the hot enema, fomentations over the lower part of the spine, and the local application of electricity con-

constitute the best known means of treatment. Some eminent surgeons have recently resorted to the plan of removing one or both of the ovaries in cases similar to this. The effect thus far has been very satisfactory, although the remedy is not entirely free from danger. We have treated quite a large number of cases of ovarian irritabillity, and have thus far succeeded in effecting a cure without resorting to a surgical procedure.

OVARIAN DROPSY.

SYMPTOMS.—Begins with dull pain low down on one side of the body; scanty menstruation, and finally suppression; dragging pain in the bowels; painful and frequent urination; difficulty in moving the bowels; great debility; loss of flesh; enlargement begins on one side of the body.

Ovarian dropsy consists in the formation of a cyst in the ovary which gradually enlarges until it obtains in some instances of very great size, and is filled with fluid which differs in character in different cases. The ovary is also subject to the growth of various other tumors, as fibrous and cancerous tumors. Ovarian dropsy generally runs its course in about four years. The causes are obscure. The difficulty is probably occasioned in many instances by inflammation of the ovary.

Treatment.—The medical treatment of ovarian dropsy consists in withdrawing the fluid by means of tapping, or preferably by the use of the aspirator, the employment of galvanism and electricity in other forms, and improvement of the patient's health in every possible way. In a case which we had under treatment a few years ago, the tumor had obtained such enormous size as to give to the patient, naturally a very slight woman, a waist circumference of over forty-four inches. The plan of treatment in this case was removal of the fluid by means of the aspirator, followed by the application of a strong galvanic current over the affected part. The result was that the patient was able to leave for her home after six or eight weeks' treatment without the slightest trace of any disease; and when we met her a year later, she continued well.

The only radical cure for the disease, however, is ovariotomy, a surgical operation by means of which the diseased ovary, with the cyst attached to it, is removed. This is a comparatively recent procedure, and is one of the most brilliant operations of modern surgery. When the operation was first employed, a very large proportion of those operated upon died; but so many improvements have been made since that time

that skillful operators have now reduced the risk of death to eight per cent, or eight in one hundred. A celebrated English operator recently performed the last of one hundred successive cases without a single death.

INFLAMMATION ABOUT THE UTERUS, ETC.

SYMPTOMS.—Fever; pelvic pain; small, wiry pulse; nausea and vomiting; tenderness on pressure just above the pubic bone; painful urination and defecation; profuse menstruation.

Inflammations of this sort are much more common than is generally supposed, and are generally very serious in their results. There is a strong tendency to the formation of abscesses. Another serious complication is the inflammation of the broad ligament, which subsequently contracts, thus becoming shortened. This kind of shortening is a common cause of lateral displacements of the uterus.

Causes.—Inflammation following child-birth, abortion, taking cold during the menstrual period, inflammation of the ovary, gonorrhœa, the use of caustics upon or in the uterus, wearing of ill-fitting pessaries, sexual excesses; these are the most common.

Treatment.—An acute attack can generally be checked by a sufficiently thorough and energetic course of treatment. The patient should be kept perfectly still in bed. If the fever is high, the ice-cap should be applied with ice-compresses or bags filled with ice-cold water to the spine. The most effective measures of treatment, however, are the hot vaginal douche and the hot enema. These should be given with great thoroughness. The douche should be taken for an hour at a time, and should be repeated three or four times a day, or it may be given continuously for several hours. This is the most reliable means known for cutting short an inflammation after it has begun. Hot applications should be made to the feet to balance the circulation. The hot blanket pack, as a means of inducing prespiration, is an excellent measure in this disease, as it relieves the congestion of the internal organs. Chronic cases require the persistent use of fomentations over the lower part of the abdomen, hot douches two or three times a day, together with rest in bed and complete functional rest of the affected organs. Attention should be be given to the improvement of the general health by means of a good diet, massage, the use of electricity in various forms, etc. We have thought that the absorption of the hardened

mass felt after an attack of this sort has been in many cases stimulated very greatly by the local use of galvanism. Care should be taken, however, to avoid the employment of too strong currents. In one case which had been under treatment for some months, with very great benefit, though the patient was not entirely cured, the lady became somewhat impatient because we refused to employ as strong currents of electricity as she wanted, and resorted to a Chicago physician who made a speciality of the use of electricity. She received from this source the strong current she desired, but the result was most disastrous, as an inflammation was set up which obliged her to return to us, and which we had much difficulty in subduing.

AMENORRHŒA.

Amenorrhœa is a condition in which the regular monthly flow is suspended. It is not a disease of itself, being simply a symptom of some disorder of the uterine organs. The conditions from which it may arise are various. In pregnancy, menstruation is usually suspended, although in exceptional cases the regular monthly flow continues. There is some discussion, however, whether in these cases the loss of blood is the true monthly menstrual flow. Menstruation is also usually suspended during nursing, although the function is not infrequently resumed two or three months after childbirth. Imperfect development of the reproductive organs and obstruction of the uterus or the vagina are conditions which occasionally give rise to amenorrhœa. When a mechanical obstruction exists, there is generally enlargement of the abdomen from accumulation of the menstrual fluid. Sudden suppression of menstruation is generally due to taking cold during the menstrual period, or sudden mental shock. When it occurs suddenly in this way, the patient generally complains of pain in the back, headache, fever, and other unpleasant symptoms. We have noticed also, in some cases, temporary suspension of the menstrual flow in consequence of a change in diet, in which persons who had been accustomed to a stimulating diet, consisting largely of animal fat, including a free use of stimulating condiments, suddenly discontinued the use of these articles. In these cases, however, we have never observed any impairment of the general health; in fact, in the majority of cases there has been improvement in the general health notwithstanding the suppression of this function. In the course of a few months the function appears again, though as a general rule the flow

is somewhat less profuse than before. We have observed a few peculiar cases of suppression of menstruation in which the patient suffered at the times when menstruation should appear, with peculiar nervous symptoms closely resembling a slight epileptic attack.

Patients suffering with amenorrhœa are frequently subject at the time when the menstrual flow should make its appearence to hemorrhage in various parts of the body, as from the nose, lungs, stomach, bowels, etc. Some cases have been observed in which bloody-sweat appeared at these times. These hemorrhages are sometimes termed vicarious menstruation.

Treatment.—In cases in which the function has never appeared, the difficulty is generally due to morbid development, or some form of obstruction. For the first condition, such measures should be adopted as will improve the patient's general health, and secure proper development. In these cases, the hips are generally narrow and the breasts small, and the patient has in many cases something of a masculine appearance. When the difficulty has existed for a long time, its removal may be impossible; hence the importance of giving attention to the matter in time. When obstruction exists, as indicated by the periodical occurrence of the usual symptoms of menstruation, but without the menstrual flow, and with enlargement of the lower part of the abdomen, surgical measures should be resorted to, to allow the accumulated fluid to escape. This should be done gradually, however, and in such a way as to prevent the entrance of air, as otherwise decomposition would occur, which might result in poisoning of the blood. This class of persons often suffer much mental annoyance through suspicion of pregnancy.

In cases in which suppression occurs suddenly during the menstrual period, the patient should take a hot foot or sitz-bath, or better still, a hot blanket pack, and should be made to sweat profusely by this means combined with hot drinks. Hot fomentations should be applied across the lower part of the bowels, bricks, hot bags, and other similar applications to the limbs and inside of the thighs. Ice bags or compresses should be applied over the lower portion of the spine, and the patient should be kept quiet in bed.

When amenorrhœa exists in consequence of debility or anæmia, as in consumption and other prostrating diseases, attention should be given to the improvement of the general health by nutritious food,

daily exercise in the open air, daily massage, with inunctions, electricity and other tonic measures. In these cases, the amenorrhœa is not to be considered as the cause of the existing debility or general disease, as is usually thought to be the case. It is simply the result of general depression of the system which will disappear with the removal of the cause. In these cases, warm sitz-baths, hot fomentations over the bowels, and daily application of the ice compress to the lower portion of the spine for an hour or two, are useful measures. The local application of electricity by a competent person is also of very great advantage.

Scanty Menstruation.—The length and quantity of the menstrual flow varies very greatly in different individuals within the limits of life. A person suffers with scanty menstruation when the function is meagre compared with what is usual for the same individual.

The principal causes of this condition are consumption, inflammation of the ovaries, ovarian tumors, anteflexion of the uterus, mental depression, chlorosis, and general debility.

Treatment.—The general treatment should be the same as recommended for similar cases in which menstruation is entirely suspended. For a few days before the period should make its appearance, the patient should take daily a warm sitz-bath for fifteen or twenty minutes. At the time of the period, warm enemas and cold compresses applied to the lower part of the spine, with fomentations over the bowels at the same time, constitute the best measures of treatment. The difficulty will generally exist until the patient shows marked evidences of improved health.

MENORRHAGIA—PROFUSE MENSTRUATION.

The same remarks made respecting the preceding condition apply to this. There is no definite standard as to the length or quantity of the menstrual flow. When the flow is much more than usual, or so excessive as to produce weakness and prostration either at the time, or after, it may be termed menorrhagia.

Menorrhagia may be produced by either plethora or debility. When resulting from plethora, the patient suffers with severe throbbing headache, pain in the back, and general symptoms of fever. When it results from the opposite condition, the patient is very weak, pale, and thin in flesh, and the flow is almost continuous, one period begin-

ning almost immediately at the conclusion of the other. In addition to plethora and debility, menorrhagia may be the result of chronic congestion of the uterus, prolapsus and other displacements, tumors, laceration of the neck of the uterus, disease of the heart, liver, lungs, and other important organs.

Treatment.—In cases of menorrhagia arising from plethora, the diet should be simple and plain. The patient should take but two meals a day, and little or no meat. Abundant out-of-door exercise is also essential; great advantage may be derived from the use of packs, vapor baths, hot-air baths, and other eliminative treatment, until the symptoms of plethora disappear. Daily cold sitz baths between the periods are also advantageous. At the time of the period, and about twenty-four hours before it is expected, the patient should have complete mental and physical rest in bed. Cold cloths should be applied over the lower part of the abdomen and between the thighs. A cold or cool enema should be given two or three times a day. Cold should should not be applied for more than an hour or two at a time without allowing an interval of half an hour.

In patients who are pale, debilitated, and have but little blood, energetic measures are often needed. The patient should observe the directions just given respecting quiet. Cold applications should be made to the lower part of the bowels, being replaced once in twenty or thirty minutes by a hot fomentation for three or four minutes, cold being then applied again. The cold enema and often the cold vaginal douche are indicated when the flow is extremely profuse. The hot vaginal douche is also useful.

In one case in which the hemorrhage could not be controlled otherwise, we had a patient placed in a sitz bath at eighty degrees, having the temperature rapidly lowered by the addition of small quantities of snow and ice. The desired result was almost immediately obtained

In cases in which the hemorrhage is almost continuous from one period to another, the patient should remain in bed or lie upon the sofa several days after the flow has been checked by the treatment before described. This disease can only be permanently cured by improvement of the general health. The same directions for treatment should be followed in cases in which the menorrhagia arises from congestion, tumors, displacements, or any other of the causes mentioned. When the hemorrhage cannot be controlled in any other way, it sometimes

becomes necessary to plug the vagina with cotton in the manner described for checking uterine hemorrhage.

METRORRHAGIA—UTERINE HEMORRHAGE.

This is a hemorrhage occuring from the uterus at other times than at the menstrual period. The causes are essentially the same as those described as occasioning menorrhagia.

Treatment.—Keep the patient quiet in bed; apply cold over the bowels and between the thighs; administer cold enemas and cold vaginal injections. In case the hemorrhage is severe, much may be gained by tying a band tightly around one or both lower limbs, thus retaining in the legs a large amount of the venous blood. The ligature should not be retained long enough to do harm, and should be gradually removed if the limbs should become considerably swollen and purple. Compression may also be practiced by means of a pad composed of a folded towel placed over the womb. In severe cases it often becomes necessary to plug the vagina. This is best done by means of moist cotton. The cotton should be saturated with water and squeezed as dry as possible. It should then be soaked for a few seconds in a strong solution of alum and again squeezed dry. It should then be made into a number of small rolls of a size convenient for introduction, and after tying a string ten or twelve inches in length around the center of each, they should be passed into the vagina and crowded up around the neck of the uterus as tightly as possible. The whole neck of the womb should be surrounded, and the vagina should be packed as full as possible. Care should be taken that no spaces are left between the different portions of cotton, and that the whole mass is made as compact as possible. This is generally known as tamponing the vagina. The operation cannot be thoroughly done without the aid of a speculum, and hence a physician should be called in every case of uterine hemorrhage sufficiently severe to require this mode of treatment. Persistent hemorrhage also demands a thorough examination by a competent physician to ascertain the real cause of the difficulty in order to adopt the proper measures for permanent relief.

DYSMENORRHŒA—PAINFUL MENSTRUATION.

There are said to be five varieties of this affection, which are termed respectively neuralgic, congestive, obstructive, membranous,

and ovarian. Neuralgic dysmenorrhœa is caused by general neuralgia, chlorosis, gouty and rheumatic conditions of the system, high living, especially the use of stimulating condiments and excessive quantities of meat, sexual excess, and secret vice. Congestive dysmenorrhœa is caused by plethora, sudden chill, taking cold at the beginning of menstruation, chronic congestion of the uterus, retroflexion, cellulitis, torpidity of the liver, and constipation of the bowels. Obstructive dysmenorrhœa arises from obstruction of the canal of the uterus by anteflexion or other causes, as a fibrous tumor, polypus, or swelling of the mucous membrane from uterine catarrh. The variety known as membranous dysmenorrhœa, in which a cast or mold of the cavity of the uterus is sometimes expelled, is due to chronic congestion of the uterus, which is increased at the menstrual periods almost to a condition of inflammation. Ovarian dysmenorrhœa results from congestion and inflammation of the ovaries.

In neuralgic dysmenorrhœa, the patient has throbbing pain in the loins and lower part of the bowels, together with neuralgic pains in other parts of the body. In congestive dysmenorrhœa, when produced by taking cold, as by getting the feet wet just before the time of the menstrual period, the patient suffers with severe pain, often accompanied by a chill, which is followed by fever. When inflammation is present, the pain is dull and heavy. Severe bearing-down pains for a few hours or a day or two before the beginning of the flow, with relief either entirely or to a great extent as soon as the flow is established, indicates obstruction. In membranous dysmenorrhœa, the patient suffers with severe bearing-down pains, which cease as soon as the membrane is expelled. Ovarian dysmenorrhœa is characterized by pain continuing for several days before the period, in one or both groins, and extending down the thighs; there is also, usually, tenderness in one or both breasts. The tenderness in the groin is more or less marked between the menstrual periods.

Treatment.—Dysmenorrhœa can generally be cured by the adoption of proper means, provided the real cause is ascertained; though when due to fibrous tumors of the uterus, the treatment often fails. The most that can be done, however, in the domestic treatment of the difficulty, is to palliate the symptoms at the time of the menstrual period. Curative treatment can be best managed by a competent physician. The patient suffering with any form of dysmenorrhœa should take care to keep the bowels quite free by a carefully regulated diet,

and the use of the warm water enema when necessary. Laxatives and purgatives should be carefully avoided.

The patient should rest quietly in bed or upon the sofa for a day or two before the time for menstruation to begin. On the day it is expected, or as soon as the pain commences, the patient should take a hot full bath or a hot blanket pack, and should afterward be covered with warm woolen blankets, with hot water bags or heated bricks to the feet and back and over the lower part of the abdomen. The patient should be kept as quiet as possible. Severe pain, when not relieved by these measures, will often yield to hot fomentations when rapidly applied; or the application of the hot blanket pack. Especial pains should be taken to keep the feet and limbs thoroughly warm. The use of both faradic and galvanic electricity is in some of these cases very advantageous. We have often secured almost immediate relief from pain by their use. A large, hot enema will sometimes give relief. The water should be injected slowly, and should be retained for some time, half an hour at least if possible to do so. In some cases, hot sitz baths give speedy relief. Fomentations across the lower part of the back are also very advantageous. Opium is very frequently resorted to in these cases, but it should be avoided as much as possible, as the opium-habit is very likely to be contracted.

We have met a number of cases in which the habit was produced in this way. If anodyne remedies of any sort must be used, gelsemium hyoscyamus, and conium are much to be preferred. These remedies should of course not be used unless prescribed by a physician. We seldom find it necessary to resort to their use, almost invariably securing relief by the measures described.

NYMPHOMANIA.

This term is applied to a condition in which there is an intense degree of sexual excitement. A female suffering with this affection will sometimes commit the grossest breaches of chastity. Its principal causes are self-abuse and a complete abandonment of the mind to lascivious thoughts. It is sometimes produced by ovarian irritation and by various diseases of the brain. The genitals are often found in a state of great excitement and abnormal enlargement in this affection.

Treatment.—Cool sitz baths; the cool enema; a spare diet; the application of blisters and other irritants to the sensitive parts of the

sexual organs, the removal of the clitoris and nymphæ, constitute the most proper treatment.

The same measures of treatment are indicated in the cases in which the disposition to practice self-abuse is uncontrollable by other means. In an extreme case of this kind brought to us for treatment a few years ago, we were compelled to adopt the last-mentioned method of treatment before the patient could be cured.

STERILITY.

This condition differs from impotence in that the patient is not incapable of the sexual act, but remains childless.

Causes.—The most common causes are displacements of the uterus, contraction of the uterine canal, leucorrhœa, catarrh of the uterus, menorrhagia, sexual excess, secret vice, absence of the uterus or ovaries. Women who suffer from great losses of blood at the menstrual period, and those who are excessively fat are very apt to be childless, or if they become pregnant are likely to suffer miscarriage. In a much larger proportion of cases of sterility than is generally supposed, the difficulty exists in the husband instead of the wife. The causes of sterility in husbands have been considered elsewhere. It may be mentioned here that Dr. Nœggerrath, an eminent physician of New York City, after a very extensive investigation of the subject, asserts that what he terms "latent gonorrhœa" is a very common cause of sterility. Dr. N. holds that if a man has once suffered with gonorrhœa, even when months or years have elapsed after a cure has apparently taken place, he is still likely, in case he marries, to communicate to his wife a disease which will render her incapable of childbearing, if he is not himself rendered incapable of procreation as a just punishment for his sin and folly.

Treatment.—The various diseases upon which sterility may depend should receive first attention, and all the known causes should be avoided, particularly sexual excess. It may be properly mentioned in this connection that sexual contact just prior to or within a few days after menstruation is much more likely to be successful than at other times.

UTERINE CATARRH—ENDOMETRITIS.

SYMPTOMS.—GENERAL: ***General debility; pulse weak; countenance pale and sallow; digestion slow; bowels very inactive; eyes dull, surrounded by a dark circle; nervousness; headache; hysteria.***

LOCAL: ***Weakness in the back and lower part of the bowels; watery or glary discharge, sometimes very copious, often appears in adhesive, stringy masses; scanty or suppressed menstruation; painful menstruation; menorrhagia.***

The mucous membrane lining the cavity of the uterus is subject to catarrh as well as all other mucous membranes of the body. This condition is generally termed, inflammation of the interior of the womb, and it has long been treated as such. It has recently been thoroughly demonstrated, however, that this is not the case, and that the condition of the mucous membrane of the organ is that of congestion and not inflammation.

Causes.—The most common causes are improper dress; taking cold at the menstrual period; sexual excess; self-abuse; and whatever may cause congestion of the womb. It occurs very frequently in women who for any reason do not nurse their children after childbirth.

Treatment.—All exciting causes, so far as possible, should be removed. If the patient has been in the habit of wearing the clothing tight about the waist and suspended from the hips, and has neglected to clothe the lower extremities properly, these matters should receive immediate attention. The limbs should be thoroughly clad in flannel the greater portion of the year. The feet should be protected by thick woolen stockings and warm shoes. The clothing should be so loose as to remove all compression about the waist, and should be suspended from the shoulders by a waist or properly adjusted suspenders. The "emancipation waist," "hygienic waist," and other articles of clothing introduced by the Ladies' Dress Reform Committee of Boston, are to be highly recommended, and we are glad to see that these articles are meeting with general favor and are being introduced into all our large cities.

The diet of the patient should be nourishing but unstimulating. A large proportion of animal food is not advisable. Fruits and grains, with a moderate allowance of eggs and milk, constitute the best diet. Although excessive exercise, such as running, jumping, lifting, and horseback riding are injurious, a considerable amount of daily gentle exercise in the open air is very important. The sexual system should have entire rest during the course of treatment. In many cases, mar-

ried women suffering with uterine catarrh are barren. When pregnancy occurs, it is likely to be attended by a great number of complications, some of which are highly dangerous.

Careful attention should be given to the regulation of the bowels. A thorough movement should be secured daily, the enema being employed if necessary. In most cases, however, the inactivity of the bowels may be overcome by careful attention to diet, daily kneading of the bowels, and wearing the moist abdominal bandage at night. The local treatment of the disease consists in the employment of sitz baths and hot water douches. The sitz bath should be taken daily, or at least every other day, as follows: Begin the bath at 95°, after five minutes, lower the temperature to 90°; after ten or fifteen minutes longer, the temperature should be lowered two or three degrees more and the bath immediately concluded. A warm foot bath should be taken at the same time, at a temperature four or five degrees higher than that of the sitz bath. In taking the hot douche, the patient should lie upon a bed or properly constructed table, with the hips slightly elevated. The glass or metal tube attached to the rubber tubing of the syringe should be passed up into the vagina behind the neck of the womb. From three to eight quarts of water should be employed at a temperature at least three or four degrees above that of the body. The best effect is obtained when the temperature of the water is increased to 110°; although good results may be obtained if the water is only 100° to 105°. If the patient finds disagreeable sensations are produced by a temperature which is not sufficiently high to produce the desired results, water of a lower temperature as 95° to 100° may be employed first, the temperature being gradually increased until the water is as hot as necessary. In occasional instances, disagreeable sensations will follow the first use of the hot douche, but this may be avoided by employing water of a moderate heat, and gradually increasing the temperature.

The best instrument for administering the douche is the syphon syringe. Fig. 210. The Davison, and various other forms of syringes may also be employed. The hot vaginal douche stands at the head of all remedies for uterine diseases of almost every description; but it is im-
rtant that it should be administered thoroughly. It is impossible for
tient to take the treatment herself in such a way as to accomplish
good. It cannot be taken in an upright or sitting position, or in
er way than with the patient lying upon the back, with any
good results. The employment of these measures should be

persisted in not only until the slightest symptoms of the local disease have passed away, but for several weeks after, and for a few days after each menstrual period for several months. It is unnecessary to remark that the sitz bath or douche should be suspended during the menstrual period unless the disease has assumed such a form as to occasion painful menstruation, when the hot sitz bath may be necessary to give relief. The injection of irritating lotions of various sorts into the cavity of the uterus, a measure of treatment employed by some physicians, is in our opinion a hazardous procedure and one that is rarely ever required. We have had occasion to see the ill effects of this mode of treatment in a number of cases. In a case which came under our care a few months ago the patient had recently been treated by an injection into the cavity of the womb of a strong solution of nitrate of silver. The immediate results were so serious that the lady barely escaped with her life. We scarcely need add that the chronic congestion of the organ from which she had suffered many years was greatly aggravated in the inflammation which followed, in which not only the womb itself, but its surrounding tissues were involved. By this one act of imprudence an amount of damage was done which can hardly be repaired by many months of treatment and may occasion life-long injury.

INFLAMMATION OF THE WOMB—METRITIS.

SYMPTOMS.—GENERAL: *Similar to those of chronic catarrh of the womb, but much more intense; the patient has many feelings similar to those of early pregnancy.*

LOCAL: *Pain in the lower part of the back, extending around the body; weight, or dragging-down feeling in the bowels; pain just above the pubic bones, with tenderness on pressure; frequently, various symptoms relating to the bladder.*

This disease, like the preceding one, has long been mistaken for an inflammation, which its name really implies, but which does not in reality exist. The condition commonly known as chronic inflammation of the uterus is really congestion of the organ. In consequence of disturbance of the circulation in the womb it becomes engorged with blood and speedily becomes enlarged, sometimes reaching a size three or four times as large as in health. In consequence of the enlargement and increased weight, the organ settles down in the pelvis and thus prolapsus or falling of the womb is produced. Sometimes its increased weight tips it over forward, producing another form of displacement, known as anteversion. In other cases it tips backward against the rectum, producing retroversion; by degrees the anteversion

or retroversion may become converted into an anteflexion or retroflexion, conditions in which the organ is bent upon itself. In some cases it is tipped to one side, conditions known as lateroversion or flexion. The various symptoms arising from these several displacements are given in connection with their consideration elsewhere.

Causes.—The causes of inflammation of the womb are the same as those which have been mentioned. In cases of uterine catarrh, the whole organ finally becomes affected, as well as its mucous lining, by the long continuance of the causes referred too. Among the most active causes are sexual excess in married women, secret vice in the unmarried, the employment of various means to prevent conception, and improper dress. Very frequently, enlargement or congestion of the womb is the result of getting up too soon after confinement, in consequence of which the organ fails to return to its natural size, remaining more or less enlarged. Miscarriages and abortions are particularly liable to be followed by this condition, which is known as *subinvolution.* The wearing of badly fitting supporters should be mentioned as a not infrequent cause of chronic congestion of the womb.

Treatment.—The treatment for chronic congestion and enlargement of the uterus is essentially the same as that recommended for chronic uterine catarrh, the details of which need not be repeated here. The sitz bath, the hot douche, rest from violent exercise and from sexual excitement, and the avoidance of all the exciting causes of the affection, are the essentials of treatment. The method of treating this affection which was popular a dozen years ago, is now pronounced by the most eminent medical authorities to be in the highest degree irrational, and detrimental to the patient. The cauterizations to which thousands of women have been subjected, year after year, the only effect of which was to produce an aggravation of other ailments, are now condemned in no stinted terms by the very men who once employed these remedies.

In our experience during the last few years as Medical Superintendent of the "Medical and Surgical Sanitarium," we have met with hundreds of these cases, in which caustics had been employed at intervals for periods ranging from six months to twenty years; and we have to say that we have never met a case in which there was evidence of substantial benefit from the course of treatment employed. The effect of long-continued cauterization is to increase the very diffi-

culty which it is supposed to be efficient in curing. What the congested organ needs is not the application of irritating caustics, but the use of soothing remedies. The warm sitz bath attracts the blood to the surface, and thus relieves the local congestion. The hot douche acts efficiently as a remedy, by causing contraction of the dilated blood-vessels. Cold injections were formerly recommended for this purpose, but the benefit received by their employment was very slight, if any good at all was accomplished. Cold applications to the uterus cause immediate contraction of its blood-vessels, but the contraction produced is almost immediately followed by dilatation, so that the congestion may be aggravated rather than relieved. Hot applications cause first a slight increase of congestion, but this condition is subsequently followed by a contraction of the blood-vessels, which continues for a long time. This is well shown by a simple experiment. The hands dipped in cold water, or rubbed with ice, are at first blanched, but in a few seconds become red from congestion of the blood-vessels of the skin; while upon the other hand, if the hands are dipped in hot water, they become at first reddened, but after they have been immersed for a long time the skin becomes white through contraction of its small arteries. This is well shown in the white and wrinkled skin of the hands of a washerwoman, which have been immersed in warm water for several hours. In performing surgical operations upon the womb, when annoyed by troublesome bleeding, we have frequently resorted to the use of sponges dipped in hot water and applied directly to the organ, and have thus been able to witness an ocular demonstration of the utility of hot applications to this organ in the speedy checking of the bleeding, and the marked paleness of the organ after the application.

When there is considerable catarrhal discharge, some benefit may be derived from the employment of astringents. In addition to the hot water douche, alum, common salt, solutions of tannin, of golden seal, and various other astringent substances, are usefully employed for this purpose. It is a very good plan to add a teaspoonful of powdered alum, or common salt, to the last pint of water employed in the douche.

GRANULAR INFLAMMATION OF THE LIPS OF THE WOMB.

SYMPTOMS.—Profuse leucorrhœal discharge; general debility; aching around the lower part of the body, which is increased by walking or standing; symptoms of catarrh or congestion of the womb.

This condition of the uterus is what is ordinarily treated as ulceration. It is not true ulceration, however, ulceration affects this organ very rarely indeed. The causes are catarrh of the uterus, chronic congestion, sexual excess, and prolapsus.

Treatment.—Sitz baths, hot douches, and the use of astringent lotions when the uterus is prolapsed. Benefit may sometimes be derived by passing up into the vagina, against the mouth of the womb, a little ball of cotton saturated with glycerine, or glycerine and tannin. A string should be tied about the middle of the cotton ball, so that it may be removed when necessary. It should not be kept in place more than a day or two at a time. In many cases, the granular condition of the lips of the womb is due to the occurrence of rupture at child birth. When the tear is quite a serious one, a surgical operation is required.

STRICTURE OF THE UTERINE CANAL.

SYMPTOMS.—The patient suffers very painful menstruation and pain, beginning one or two days before the menstrual flow begins, being of a "bearing down" character.

Stricture of the canal of the uterus is a cause of the most extreme pain in those who suffer with this difficulty. It may be a natural defect, which is not felt until the beginning of menstruation, or it may result from long-continued uterine catarrh, or from anteflexion, a condition in which the organ is bent upon itself.

Treatment.—This disease, when dependent upon anteflexion, or uterine catarrh, is generally relieved by correction of these conditions. When it is congenital, however, in many cases the condition has required a surgical operation of some kind. When the oft-repeated suffering is long continued, it may so wear upon the patient as to cause a complete breaking down of the nervous system; hence it is important that it should receive early and prompt attention; and if not speedily relieved, the services of a competent physician should be secured.

TUMORS OF THE WOMB.

The womb is subject to various morbid growths, the symptoms of which are very similar to those of chronic congestion. In many cases a person suffering with uterine tumors knows nothing of the real nature of the difficulty until after consultation with a competent physician. Among the numerous kinds of malign and malignant growths which are found in this organ, we will mention only polypus, fibroid tumors, and cancer. If the patient suffers continually with menorrhagia, leucorrhœa, dysmenorrhœa, and continual bearing-down pains, she should at once consult an intelligent physician, for the purpose of ascertaining the exact local condition.

The most common tumors of the uterus are polypi. These are often very small, but sometimes attain quite considerable size. We have frequently found them present when the patient had no suspicion whatever of their existence; and by means of a surgical operation for their removal, have relieved the patient of a great amount of suffering. The various forms of fibrous cystic, and fibro-cystic tumors which affect the uterus, afford the most experienced gynecologist ample scope for the exercise of his greatest skill.

Recent advances in this department of surgery render it possible to cure in many cases of this kind what was formerly thought incurable. Malignant disease of the uterus is the most hopeless of all affections of this kind. It is generally not discovered until after it has progressed to a considerable degree of development, when the most that can be done is to delay its progress, and relieve the sufferings of the patient.

DISPLACEMENTS OF THE WOMB.

The general symptoms of displacement of the womb, are often the same as those already described as characteristic of chronic congestion of the organ, which is one of the most common causes of displacement. The uterus may be displaced in three ways, known as *anteversion*, *retroversion*, and *prolapsus*. Lateral displacements also occur, but not very frequently.

ANTEVERSION.

In anteversion, the uterus, while maintaining its straight form, is tipped forward against the bladder. The organ is tipped slightly for-

ward in its natural condition, so that anteversion is simply an exaggeration of its natural state. The particular symptoms which arise from this form of displacement are painful and frequent urination; aching pain just above the pubic bones; in some cases pain in moving the bowels; and inability to walk or to be upon the feet on account of the aggravation of the local pain. The principal causes of anteversion, are enlargement of the womb by violent efforts, as in lifting, jumping, straining, and especially tight-lacing; the last-named cause is undoubtedly one of the most common of all. Anteversion may also be the result of the weakening of the ligaments which sustain the uterus in position, which may arise from general weakness of the whole system.

Treatment.—The first matter to be attended to, is removal of the cause. This will require attention to the suggestions made for the same purpose with reference to chronic congestion of the uterus. Sitz baths and hot douches should be thoroughly employed. The patient should remain as much as possible in a horizontal position upon the back. A properly adapted pessary or supporter will sometimes be of great service as an aid to cure, although pessaries are seldom capable of effecting a cure of themselves. A surgical operation is sometimes necessary, in order to effect a radical cure. Much harm has often resulted from depending upon the use of pessaries in these cases. The supporter is of service; but we can accomplish much more in the treatment of the displacements without pessaries of any sort, than with them alone.

RETROVERSION.

This condition is that in which the uterus is tipped backward against the rectum. The organ may be tipped directly back, or inclined more or less to either side. The principal symptoms are constant pain in the lower part of the back; great discomfort in walking; increased pain on moving the bowels, with a sense of obstruction; sometimes spasmodic contraction of the rectum, or bladder; painful menstruation, in some cases, chronic inflammation of the bladder.

Treatment.—The same remark made with reference to cause and treatment in connection with the subject of anteversion, applies also to retroversion. Frequent sitz baths and daily hot douches are among the essentials of treatment. To these should be added daily replacing the organ by a competent person. When the organ is not bound by ad-

hesions, replacement may generally be effected by the patient herself by the following procedure: The patient should place herself upon the bed in a kneeling position. She should now bend forward until the chest is in contact with the bed. The limbs should now be moved downward until the thighs are perpendicular, so that the pelvis is elevated in the air as high as possible. The inlet of the vagina should now be opened so as to admit air. This may be done by raising the perinæum with the finger. As soon as the air enters, the womb falls forward into position. When necessary, air may be admitted by means of a glass tube inserted before the exercise is begun, or by means of the Davison syringe.

PROLAPSUS OF THE WOMB.

SYMPTOMS.—Dragging pain in the lower part of the back, extending around the body; general tenderness over the pubes; sensation of fullness in the vagina; irritation of the bladder and rectum; discomfort increased by walking or exertion; leucorrhœa; painful or profuse menstruation; in very bad cases, protrusion of the organ; symptoms sometimes absent.

Falling of the womb is a very common affection, especially among women who have borne children. It also sometimes occurs in women who have never been pregnant, but much more rarely. The causes of prolapsus are essentially the same as those which induce chronic congestion. When the organ becomes too large, it settles down in consequence of its unnatural weight. Prolapsus is also the result of violent muscular exertion, rupture of the perinæum in labor, and of getting up too soon after childbirth. Every cause which tends to produce disease of the sexual organs in females may occasion prolapsus. The immediate cause in chronic cases, and that which presents the greatest obstacle to successful treatment, is relaxation of the natural supports of the organ.

Treatment.—The usual treatment for prolapsus consists almost exclusively in the application of supporters of various kinds. The amount of ingenuity which has been displayed in the construction of devices of various sorts for the purpose of restoring a prolapsed uterus to its natural condition is not surpassed by the display of inventive genius in any other direction. While pessaries or supporters of some kind are often very useful in the treatment of prolapsus as temporary palliatives, and as a means of relieving cases which are incurable, they should ever be regarded as incapable of producing a radical cure. In many cases they actually increase the morbid conditions upon which the prolapsus depends, although giving temporary relief to the most unpleasant symptoms attending this form of displacement.

A rational plan of treatment for prolapsus requires, first, the removal of the causes by which the difficulty has been produced, when they are still in operation; second, relief of the congestion and enlargement of the organ by proper treatment; third, palliation of the painful symptoms attending this condition; fourth, restoration of the natural supports of the organ to a healthy condition.

The first indication must be met by thorough and careful attention to the laws of sexual hygiene. The second indication is best met by a persistent use of sitz baths and the vaginal douche, which should be taken as recommended for the treatment of catarrh and congestion of the womb. In many cases, the douche can be taken twice a day with advantage, in the morning and again just before retiring at night. Greater benefit is derived from this treatment when the patient can remain in a recumbent position for some hours afterward.

In some cases the patient requires rest from walking and other exercises upon the feet. In the majority of cases, however, it is better for the patient to continue as much exercise as can be endured without excessive fatigue, as it is important that the muscular strength should be kept up. The third indication is in part met by the treatment already described. The hot douche and sitz baths will generally accomplish more, than any other two remedies in relieving the local pain and discomfort In many cases, much additional benefit may be derived from wearing a properly adapted pessary or supporter. When the womb is prolapsed, its circulation is interfered with so that the organ becomes engorged with blood. This can be overcome by a restoration of the organ to its proper position so as to give freedom to the circulation. The simplest form of supporter is a small roll of cotton. It should be pressed up against the mouth of the womb after it has been restored to its proper position. It should be introduced while the patient is lying upon the back. The ball of cotton should be large enough to be retained in position, and should be saturated with glycerine or a weak solution of tannin in glycerine before being applied. A string should be tied around the center of the roll to facilitate its removal. This application the patient can make for herself, though not nearly so well as it can be made by a physician. Care should be taken in removing the cotton that the organ is not dragged down with it. It should be first loosened by the finger to facilitate its removal. Cases which need the application of the pessary require the care and attention of an intelligent physician.

The fourth indication is the most important of all, as it relates more directly to the radical cure of this affection. Unfortunately, this part of the treatment of prolapsus is rarely attended to. Either the physician fails to appreciate the importance of this part of the work, or the patient is satisfied with a mere amelioration of her symptoms, and fails to persevere in carrying out the proper methods of treatment until a complete cure is effected. In meeting this indication, one of the best of all measures of treatment is the daily employment of special exercises. General exercise is essential for the purpose of strengthening the general muscles of the body ; but there are certain special exercises which may be taken, the advantage of which can hardly be overestimated.

We will describe two or three of the more simple forms of special exercise. Let the patient place herself upon a smooth and moderately hard surface. A soft, springy bed is not suitable for the purpose. A hard sofa will answer very well. The feet should be drawn up as close to the body as possible. Let the patient now lift the lower part of the body so that the hips and lower portion of the trunk will not touch the surface, the body being wholly supported by the feet and shoulders. The body should be held steadily in this position for a minute or two, or as long as possible without any considerable fatigue to the muscles, when the body should be lowered to its original position. After a few minutes' rest, the same exercise should be repeated. This exercise may be continued twenty or thirty minutes, according to the patient's strength. By elevation of the hips in the manner described, the contents of the lower portion of the abdomen will, by the force of gravitation, be drawn from their abnormal position into their original place. Prompt relief very often follows the employment of this measure, even the very first time it is applied ; and if it is continued daily, and two or three times a day when the patient is sufficiently strong, very excellent results may be looked for.

Another movement which is very effective for the same purpose, consists in supporting the body upon the toes and elbows with the face downward, the hips being raised as much as possible. Still more thorough exercises may be taken by the aid of an assistant. One of the best of this sort consists in elevation of the lower extremities by means of an assistant, while the patient lies upon the face, supporting the body by the chest and keeping the limbs rigid while the feet are elevated by the assistant. While the hips are elevated in movements of this sort, the intestines fall forward in the abdominal cavity, dragging the prolapsed womb after

them. Movements of this sort not only strengthen the abdominal muscles by calling them into active exercise, which of itself has a tendency to lift the prolapsed organs into position, but the force of gravitation acts directly to restore the displaced organ to its normal position. The patient will also derive great advantage from sleeping with the hips elevated as much as is consistent with comfort. In addition to these measures, the patient may take with advantage certain exercises for developing the muscles of the trunk and abdomen, such as bending forward and backward, bending sideways, kneading and percussing the abdominal walls, lifting weights with hands stretched above the head while laying down, etc.

Electricity is an admirable remedy for use in these cases. It may be applied both externally and internally. When applied internally, it should be in the hands of a competent physician unless administered in connection with the hot douche, see page 703, a plan which we very highly recommend. These movements may be taken several times a day with advantage. If taken but once, the best time is at night just before retiring. This is also the best time for taking an astringent douche. A very excellent plan is to take the movements first, then the hot douche, concluding by the injection of a pint of water containing one quarter of an ounce of alum or tannin, or two tablespoonfuls of a strong decoction of oak bark. By means of the movements the uterus is restored to its natural position, and by the aid of the hot and astringent injections, the lower supports of the uterus are toned up so as to aid in holding the organ into position.

Congestion is also relieved by the same treatment; and this gives nature the opportunity during the night to do much toward restoring the organ to its normal condition. When the patient suffers much with constipation, which is always present in these cases, and very obstinate, the bowels should if possible be relieved at night just before retiring. In case there is loss of desire to move the bowels, which sometimes exists, benefit will be derived from the injection into the rectum of four tablespoonfuls of cold water containing five or six drops of tincture of camphor. The solution should be retained ten minutes, by the end of which time there is generally a very strong desire to move the bowels.

In cases in which the prolapsus is due to rupture of the perinæum in childbirth, a surgical operation may be required to effect a cure. We have met a number of cases of this kind, and by performing the

necessary operation to restore the parts to a natural condition, have obtained the most gratifying results. It has been suggested to secure support for the prolapsed organ by means of various operations upon the vaginal walls. Operations of this sort are seldom required. In cases in which the organ is prolapsed to such an extent as to appear outside of the body, which is a very rare condition, however, a complete cure can rarely be effected, although the organ may be supported by means of properly adapted pessaries.

FLEXIONS.

From various causes, the womb may become folded upon itself. When this occurs anteriorly, it is termed anteflexion. When the organ is folded backward against the rectum, the condition is termed retroflexion. Lateroflexion is a condition in which the organ is folded over to one side. Anteflexions and retroflexions usually result from ante- and retroversions. The principal symptoms of anteflexion are an irritable condition of the bladder, with a frequent desire to urinate; a severe pain at the beginning of menstruation, which is usually relieved suddenly and completely at the beginning of the menstrual flow. The pain sometimes lasts a day or two at the beginning of each period, the patient often being at other times quite free from any inconvenience. The symptoms of retroflexion are essentially the same as those of retroversion except that they are all exaggerated. Pain in the back and obstinate constipation are the leading symptoms. The patient is also likely to suffer with profuse menstruation and a considerable increase of pain at the menstrual periods.

Treatment.—The same general plan of treatment recommended for prolapsus should be followed for flexions and all other displacements of the womb. In case of anteflexions, the first form of special exercise recommended for prolapsus should be taken daily. In cases of retroflexion, as well as of retroversion, the two last forms of exercise cannot be too highly recommended. Hot douches, astringent injections, and frequent sitz-baths, are as valuable remedies in this case as in prolapsus.

LEUCORRHŒA—WHITES.

This is a symptom of disease rather than an independent malady. It is indicative of quite a variety of conditions. The discharge to which the term "whites" or "female weakness" is familiarly applied, varies

considerably in character. A natural discharge of whitish mucus, the proper secretion of the vaginal mucous membrane, takes place for a short time just before and just after menstruation, and need occasion no concern; but when the discharge becomes continuous, not disappearing in the interval between the menstrual periods, it becomes a symptom of disease. A very profuse discharge naturally takes place also in the latter part of pregnancy.

The indication of this symptom depends largely upon the character of the discharge. Viscid, mucous discharges are generally from the womb. Curdy, mucous discharges are occasioned by catarrh of the vagina. Clear or turbid watery discharges, especially when very offensive in character, are indicative of tumors or malignant disease of the womb. Discharges containing pus are indicative of inflammation or ulceration; they may proceed from the vaginal mucous membrane or from the uterus. Reddish or bloody discharges accompany tumors of various kinds, cancer, and ulceration of the womb; discharges of a very offensive character, especially when occasionally mixed with blood, are indicative of the presence of malignant disease. Offensive discharges are not positive evidence of the presence of cancer, however, as they may arise from other causes.

In an addition to the special causes mentioned, leucorrhœa may result from simple congestion of the blood-vessels of the vaginal mucous membrane due to improper dress. It may also be occasioned by taking cold, by sexual excess, and by a debilitated condition of the stomach.

Treatment.—Hot douches and sitz baths are as effective for this as for other morbid conditions of the female sexual organs. The hot water injection should be made slightly astringent in character by the addition of powdered alum, tannin, and other mild astringents. Alum may be used in the proportion of a teaspoonful to a quart of water. Tannin may be used in proportion of one dram to the same quantity of water. When the discharge is offensive, a solution of permanganate of potash in the proportion of ten grains to a pint of water, or carbolic acid in proportion of fifteen drops to a pint of water, will generally be effective in correcting the fetor.

INFLAMMATION OF THE VAGINA—VAGINITIS.

SYMPTOMS.—Hot and burning pain in the vagina; aching pain in the perinæum; frequent urination; profuse and purulent leucorrhœa; soreness of the external parts.

This affection very closely resembles gonorrhœa, from which it is sometimes difficult to distinguish it. In a somewhat rare variety of the disease the whole vaginal mucous membrane is covered with granulations, which renders it exceedingly sensitive. The causes of vaginitis are cold, irritating discharges from the womb, caustics, badly fitting supporters, self-abuse, and excessive coitus.

Treatment.—An acute attack of vaginitis can generally be cured in ten days or two weeks by the employment of sitz baths, warm douches, injections of starch water, and resting in bed. Other measures are seldom necessary. When the disease is chronic, longer time is required for a cure. Glycerine and tannin, in the proportion of one half dram of the latter to one ounce of the former, is an excellent remedy in chronic vaginitis, to be applied to the affected part daily or every other day by means of cotton saturated with the solution. A solution of chlorate of potash, a dram to a half pint of water, is also a very useful remedy. Dr. Smith, of London, especially recommends a solution of half an ounce of alum and a dram of tannin to a quart of water, one-half to be used at night and the other half in the morning.

Gonorrhœa in females is to be treated upon essentially the same plan.

VAGINISMUS.

SYMPTOMS.—Pain on walking; severe spasmodic pain on touching the affected part.

This is often a very severe affection, being the occasion not only of great inconvenience, but of intense mental as well as physical suffering. It consists in an unnaturally sensitive condition of the vagina which causes violent spasmodic contraction of its walls from the slightest irritation. The chief causes are hysteria, inflammation of the vagina, excoriations of the mucous membrane, vascular tumors of the urethra, and fissure of the anus.

Treatment.—This affection is sometimes exceedingly obstinate, requiring a surgical operation for relief. The patient should consult a competent physician without delay.

CYSTOCELE.

This is a condition in which the anterior wall of the vagina, together with the bladder, falls downward in such a way as to produce a bulging. In some cases the parts protrude. The most common cause of this condition is rupture of the perinæum in childbirth. In consequence of the

falling down of the lower portion, the bladder is never entirely emptied of urine, and as a result, decomposition of the retained urine takes place, which gives rise to catarrh of the bladder, pain, heat, painful contractions, and difficulty in urination. The appearance of these symptoms after an unusually hard childbirth, from which the parts have been exceedingly sore and long in healing, may well give rise to apprehension of this condition, and a good surgeon should be consulted. We have frequently met with cases of this kind, which had been treated for disease of the bladder for many years without the real cause of the trouble being discovered, to whom we have been happy to bring relief by the performance of a surgical operation, by means of which the parts were restored to their natural condition.

RECTOCELE.

This is a condition similar to the preceding, occurring in the posterior wall of the vagina. On account of rupture of the perinæum, the natural supports of the uterus are removed, and this organ settles down, causing a bulging forward of the lower portion of the vagina, and with it the anterior wall of the rectum to which it is attached. This pouch-like extension of the rectum gets filled with the contents of the bowels, producing much pain, tenesmus, local irritation, and mucous discharges from the bowels. Rectocele, like the preceding condition, can only be cured by a surgical operation, a proceeding which we have often found necessary in patients who have suffered for many years without being aware of the nature the difficulty.

ITCHING OF THE GENITALS—PRURITUS.

This is a most annoying affection which sometimes renders the life of a person suffering from it almost intolerable. It may be caused by irritating discharges from the uterus or vagina, or it may be due to an extension of a disease of the skin to these parts. It is quite likely to occur in women suffering from diabetes. It is also one of the miseries attending upon cancer of the uterus, arising from the irritation caused by the acrid discharges characteristic of this disease. Thread-worms are also said to be a cause of this affection. It occurs most frequently at the time of the menopause, or "change of life."

Treatment.—When caused by an acrid discharge, keep the parts thoroughly [illegible] nt vaginal injections. The intolerable itching [illegible] the use of one of the following solu-

tions: Sulpho-carbolate of zinc two drams, dissolved in eight tablespoonfuls of water, to be applied to the affected parts twice a day, and allowed to dry upon the surface; carbolic acid, ten to twenty drops, glycerine and water each a tablespoonful; powdered borax or sulphite of soda a teaspoonful, desolved in a pint of water. When there is much irritation of the parts, some soothing ointment should be applied, as vaseline. Hot injections are also recommended.

IMPERFORATE HYMEN.

This is a condition in which the vaginal orifice is closed by an excessive development of the hymen. When complete, it causes a retention of the menses. Although the patient has all the other symptoms of menstruation, the menstrual flow does not appear. Though not sufficient to occasion an obstruction to menstruation, it may be sufficient to render the sexual act impossible. The difficulty is not usually discovered until after marriage, and may give rise to a great amount of unnecessary distress. As the difficulty can be very easily remedied by a competent physician, such an one should be at once consulted on the discovery of grounds for suspicion of the existence of this congenital deformity.

INFLAMMATION OF THE BREAST—MASTITIS.

SYMPTOMS.—Deep, throbbing, burning pain; restlessness; fever; hard and tender swelling of the breast.

The most frequent cause of inflammation of the breast is taking cold while nursing. Inflammation may also be excited by a blow upon the breast; it sometimes occurs without apparent cause.

Treatment.—On the appearance of the first symptoms, hot fomentations should be vigorously and continuously applied for some hours. In many cases, the disease can be arrested when promptly treated in this way. Alternate hot and cold applications may be tried when fomentations do not accomplish the desired result. When the breast is swollen very large, it should be supported by means of adhesive straps carefully applied. If an abscess forms, it should be opened promptly and should afterward be treated by fomentations or poultices.

GALACTORRHŒA.

This is a peculiar condition of the breast in which a continuous flow of milk occurs either between the intervals of nursing, or after the infant has been weaned. It is chiefly due to a relaxed condition of the

nipple, abnormal activity of the gland, or to debility. It is often a very intractable affection, but can generally be relieved by astringent applications to the nipple, as of glycerine and tannin in proportion of a dram of tannin to an ounce of glycerine, or a decoction of oak bark, gentle friction of the nipple; drawing out of the nipple by means of the breast pump; or application to the breast of a solution of belladonna in glycerine, in proportion of a dram of the extract to an ounce of glycerine. Cold applications to the breast are also in many cases very effective. Ice compresses may be employed, or, better, rubber bags containing iced water or pounded ice.

OVERGROWTH OF THE BREAST.

This condition may be due to an over-accumulation of fat or to an actual overgrowth of the gland itself. The causes of the first condition, are obesity, and masturbation and other sexual excesses. Overgrowth of the gland itself is due to the organ not diminishing in size after lactation. In the first form, the breast is large and soft. In the second, it contains nodular masses which are portions of the enlarged gland. Proper treatment of the first form consists in removal of the causes; hot and cold applications in the second form of the affection.

ATROPHY OF THE BREAST.

This is a much more frequent condition than the preceding. The breast is flat and the nipple small. This condition is sometimes due to deficient development of the ovaries, in which cases it is accompanied by amenorrhœa. The more frequent cause is compression of the breast by means of stays, corsets, or artificial forms. This difficulty is very obstinate, frequently yielding to no method of treatment that can be employed.

CRACKED NIPPLE.

This affection frequently occasions a great amount of inconvenience to a nursing mother. Slight fissures which at first appear on the nipple develop into serious excoriations which may become so extensive as to destroy the nipple. The chief causes are too frequent suckling, and failure to carefully dry the parts. The best treatment is prevention. [illegible] nipple should be hardened by bathing in cool water daily for some [illegible]re its use is required. Equal parts of alcohol and water with

glycerine, a weak solution of tannin, or a decoction of oak bark, and similar lotions, are excellent means of hardening the skin, and thus preventing the occurrence of fissures. Thorough cleansing of the breast is a matter of great importance. Bad excoriations should be treated with a solution of ten or fifteen drops of carbolic acid in an ounce of glycerine, the fissures being treated two or three times a day after being cleansed. When all remedies are ineffective, it is sometimes necessary to suspend nursing.

CANCER OF THE BREAST.

SYMPTOMS.—Throbbing, darting pains, and a sense of weight in the breast; sometimes little or no pain; a hard swelling in the substance of the breast which is first movable, afterward becoming fixed; nipple drawn in; tenderness to the touch; skin over tumor reddish, afterward becoming purple; in some cases the whole breast is moderately hard, there being no distinct tumor.

Treatment.—The intractable nature of malignant disease in any part of the body, when well developed, makes it important that prompt measures should be taken upon the first discovery of any symptom affording ground for suspicion of cancer of the breast. The patient should not hesitate and temporize until the chances for a permanent cure are lost. The opinion of the best pathologists at the present day is that the disease is wholly a local affection in its early stages, so that if the diseased part is removed before other parts of the body become infected, the patient has a chance to recover. There is only one method of treatment for use and recommendation in these cases, and that is, thorough removal of the diseased part as soon as suspicious symptoms occur. The earlier the removal can be effected, the better. Of the various methods which have been employed, the removal by the knife is in the majority of cases the best, as it is a thorough operation, and it can be made painless by means of anæsthesia; it also possesses the advantage of giving the parts an opportunity for healing immediately, thus affording less opportunity for the disease to return. We have removed a number of cancers by this method, and have thus far heard of no recurrence of the disease. No remedy is a positive cure however, since the same depraved condition of the system which gave rise to the disease in the first place may cause a new outbreak, even though the first be entirely cured.

The public cannot be too frequently and earnestly warned against patronizing the numerous horde of cancer doctors who thrive upon the

ignorance of the masses, lauding the virtues and advantages of so-called specifics which are warranted to cure every case. These wonderful (?) specifics, when of any value whatever, are standard remedies which are well known to the regular profession and have been for years. The apparent success which many of these quacks achieve is due to the fact that they do not hesitate to pronounce all forms of tumors to be cancers, notwithstanding the fact that the great majority of tumors are wholly benign. A person finding a small painful lump in the breast should consult a skillful surgeon at once, especially if there is any history of malignant disease in the family. In cases of cancer of the breast which are already very far advanced, ulceration having begun and infection of the system having taken place, as shown by the debilitated condition of the patient and enlargement of the glands under the arm, etc., removal of the breast may still be of advantage in prolonging the life of the patient and adding to his comfort, although there may be no hope of effecting a cure. The application of ice to the affected part in the form of iced compresses, or better, by means of rubber bags filled with iced water or small pieces of ice, is an excellent means for relieving the severe pain which characterizes the disease, and also for delaying its progress. Frequent freezing of the diseased parts by means of a mixture of salt and pounded ice, in proportion of one part of the former to two of the latter, applied by means of a muslin bag, has been very highly recommended for holding in check the progress of this terrible malady.

FIBROUS TUMOR OF THE BREAST.

Hard, painless lumps, of the size of a filbert, are often found in the breast, sometimes several being present in the same individual. These are simply fibrous tumors, and need not give rise to any apprehension, as they rarely, if ever, become larger than the size mentioned, and usually disappear of themselves, especially if the breast is frequently called into functional activity by nursing. As these growths give rise to no inconvenience of any sort, no treatment is required.

IRRITABLE BREAST.

The breast is sometimes the seat of severe neuralgic pain. In other cases, the pain is located in the intercostal nerves, just beneath the breast, particularly upon the left side. We have occasionally met cases in which the whole breast was very sensitive, the patient shrink-

ing from the lightest touch. These difficulties arise from a great variety of causes, chief among which may be mentioned hysteria and spinal irritation. The most severe case of irritable breast we ever met, was in the person of a young woman who was grossly addicted to the habit of self-abuse. The left breast in this case was considerably swollen, pulsated violently, and was apparently so sensitive as to cause the patient to scream with pain, even at the slightest touch. The discontinuance of the habit caused an entire disappearance of the morbid irritability within a week, so that the patient was able to strike the breast a full blow without suffering any inconvenience whatever.

RUPTURE OF THE NECK OF THE WOMB.

These accidents are the result of childbirth, in consequence of unnatural rigidity, excessive size of the head of the infant, malposition, the use of instruments, precipitate labor, and perhaps from other causes. A tear may occur either in the neck of the womb, or in the perinæum. In case the laceration occurs in the neck of the womb, the patient may be wholly unaware of the accident at the time, and perhaps may never become conscious of it, but will suffer the consequence nevertheless. If the difficulty is not discovered and remedied, the usual result is, that, instead of making a rapid recovery after childbirth, the patient remains weak for a long time, and is perhaps confined to bed on account of the pain and inconvenience occasioned when she attempts to get upon her feet and walk about. She suffers with all the symptoms of congestion of the womb, and after a time suffers with prolapsus, or some form of displacement. Menstruation is likely to be very profuse. This condition often goes undiscovered, even when the patient resorts to a physician for examination and advice. The majority of cases of laceration of the cervix, or neck, of the womb, are treated for ulceration. When the physician makes an examination, he finds the lips of the womb enlarged, gaping, rolling outward, congested, and often covered with granulations. Too often these symptoms are mistaken for inflammation or ulceration of the womb, and the case is accordingly treated with caustics and various other routine remedies. In consequence of the laceration, dense cicatricia tissue forms upon the raw surfaces, which increases with the lapse of time, especially if the patient is subjected to a course of cauterization. We have met many of these cases in which laceration had existed for periods varying from five to fifteen years, the patients

having been invalids during all of this time; and in scarcely a single instance had the real nature of the difficulty been previously discovered. They had been treated for "prolapsus," "inflammation," "ulceration," "elongation of the neck," various displacements, and, in fact, almost everything but the real difficulty.

Treatment.—The proper remedy for this accident is the restoration of the torn parts to their natural condition as nearly as possible. In order to accomplish this, it is necessary to carefully remove all of the products of inflammation and long-continued irritation. The dense, cartilage-like substance which is nearly always present, and which produces a great amount of reflex irritability, such as severe headache, pain in the spine, obstinate dyspepsia, etc., must first be carefully removed; then the parts are brought together and secured, by means of a fine silver wire. In the course of nine or ten days, nature cements the torn parts together again, and the organ is restored to its normal condition. The satisfaction we have felt in being able to relieve by this simple operation patients who have come to us after having "suffered many things from many physicians," as well as from their diseases, has been only exceeded by the gratification and relief afforded the patients themselves. We have just received a visit from a patient upon whom we performed this operation a few weeks ago. She had been out of health for several years, ever since the laceration occurred, and had sought relief in vain by traveling, by medication, by local treatment, by every means that could be secured for her by a fond husband, and yet was not improved. After a few weeks of proper treatment, she submitted to the necessary operation, soon after which she returned home, and recently returned for a very brief visit for the purpose of showing us what a wonderful change had taken place. Her thin, pale cheeks, and bloodless lips, were now plump and ruddy with the glow of health. She had gained twenty pounds of flesh within a little more than six weeks. Instead of being compelled to spend most of her time in bed, upon the sofa, or in an easy chair, her step was elastic and buoyant, and she had within a few days walked four miles in a single day without feeling at all fatigued, and none the worse the next day for the exertion. We might mention numerous other cases in which the change was equally great.

LACERATION OF THE PERINÆUM.

Judging from the large number of cases of this sort which have come to our notice, laceration of the perinæum is an accident which probably occurs fully as frequently as the form of laceration just described. A slight degree of laceration almost always occurs at the birth of the first child. When this is very slight, no harm results; but when it extends into the muscular tissue, serious injury is done. The laceration may be so extensive as to bring the two passages together in one, as we found in a case which came under our care a few weeks ago. A complete laceration of this sort is usually discovered at the time of its occurrence; but when it is smaller in extent, the rupture is most frequently overlooked. The symptoms of rupture of the perinæum are, an unusual amount of soreness and long delay in healing. When the patient attempts to get upon her feet, she soon begins to suffer from the various symptoms of prolapsus, or retroversion. She is unable to walk but a short distance, suffers with pain in the back, weakness, and various other local disturbances. If the rupture is complete, there will be a loss of power to retain the contents of the bowels, especially when the bowels are loose.

Treatment.—The proper treatment for this accident, as well as the preceding, is a surgical operation, whenever the laceration is more than very slight. When the laceration is discovered, the operation should be performed within five or six hours of its occurrence. If not attended to then, it should be at a subsequent period, when the patient has so far as possible recovered her usual strength. The operation consists in making raw the surfaces which have been drawn apart, and then bringing it together with silver wire. This operation requires not a little mechanical ingenuity, but when properly performed in a case requiring it, affords a degree of relief which in some cases seems almost marvelous. In the case of a lady upon whom we performed this operation a few months ago, the improvement was so rapid that within a very short time she was able to perform a large amount of physical labor and could walk long distances without the slightest fatigue, although she had been a wretched invalid since the birth of her child some eight or nine years previous.

Judging from the large number of these cases which have come under our observation in the treatment of several hundred cases of diseases peculiar to women, at the Medical and Surgical Sanitarium,

we have no doubt that there are at the present time thousands of women who have been suffering for many years from the effects of laceration of this sort, which might readily be cured by a proper surgical operation. We have dwelt at some length upon this class of cases for the purpose of calling special attention to them. On account of the general neglect with which they are treated, we urge upon every lady who has borne children and who has any reason to suspect that any difficulty of this sort may exist, the importance of consulting a surgeon at the earliest possible moment, selecting the most competent and reliable surgeon who has had experience in such cases, who may be accessible.

Change of Life.—The change of life, or *menopause*, the cessation of the function of menstruation, usually occurs between the ages of forty and fifty. It sometimes occurs a little later, and sometimes as early as between thirty and forty. We have met one case in which it occurred before the age of thirty. The usual symptoms are irregularities in the times and quantity of the menstrual flow, various nervous symptoms, sudden flushing of the head and other parts of the body, congestion of the head, and disorders of the digestion, etc. During this critical period of her life a woman should have abundance of rest, freedom from care, frequent recreation, plenty of out-door exercise of a gentle character, and mental diversion. Special attention should be given to the general health, and all the laws of hygiene should be regarded carefully.

Coccyodynia—Painful Sitting. This is an occasional accompaniment of pregnancy, though it often occurs in other conditions as well, and is not confined exclusively to the female sex. The disease consists of a painful affection of the coccyx, or terminal portion of the spinal column. The proper treatment consists in applications of cold, alternate heat and cold, galvanism, and in bad cases, the performance of a surgical operation.

Enlarged Abdomen.—In women who have borne several children in rapid succession, the abdominal walls often become flaccid and pendulous. The only remedies for this condition are cool bathing, the application of faradic electricity, and the employment of the abdominal bandage.

OBSTETRICS, OR MIDWIFRY.

We shall not attempt to enter into the technicalities of this subject, as this is forbidden both by the object of this work and the space which can be properly devoted to it. We wish especially to emphasize, however, the fact that the art of midwifry is one which is worthy of the very highest skill and ability that can be brought to it. The once popular notion that it is something which should be left to nurses and old women is in the highest degree pernicious. While childbirth is a function which when naturally performed is attended by little risk to either mother or child, and requires but a very moderate amount of skill or knowledge to meet all the necessary requirements, it should be borne in mind that various accidents, irregularities, unnatural conditions, and sundry other deviations from the natural course of events, are likely to occur at any time, and without previous warning, being often of so serious a nature as to threaten the life of both mother and child. To meet some of these emergencies, the very highest skill and the fullest knowledge are often required. Hence this essential art should not be left in the hands of the ignorant; and it is important that the public should be sufficiently informed upon the subject to at least appreciate the necessity for, and the full value of, skill and experience in this department of medical science.

The anatomy, physiology, and general hygiene of the reproductive system, have been considered in the earlier portion of this work, and hence need not be recapitulated here.

SIGNS OF PREGNANCY.

The first indication of pregnancy likely to attract attention is the cessation of menstruation. When this occurs, without other sufficient cause, as taking cold at the menstrual period, or as the result of disease, there are good grounds for suspecting that conception has taken place, and the period of gestation or pregnancy begun. It should be remarked, however, that pregnancy may occur without the menstrual function ever having made its appearance. It should also be remarked that a periodical flow resembling menstruation, though probably really

different in character, is occasionally present during the whole period of pregnancy.

A very early symptom is morning sickness, which may occur the first week after conception, and frequently continues for six or eight weeks. Some do not suffer at all from this symptom. Others suffer with extreme severity. Cases occasionally occur in which the vomiting continues without interruption in spite of all remedies which can be employed, sometimes wearing out the life of the patient before the pregnancy is completed. The vomiting at this period is considered to be sympathetic.

At the end of six or eight weeks the breasts begin to enlarge, the nipple becomes more prominent, and the dark ring about it becomes much more distinct, especially in persons of dark complexion. The little protuberances about the nipple also become much more prominent. In some cases, dark spots appear upon the face, hands, and other parts of the body. At this time, the womb, having become abnormally heavy on account of its increasing size, settles down in the pelvis, causing the abdomen to appear flat.

Between the third and the fourth month the fetus becomes developed to such an extent that its heart-beats may be distinguished by placing the ear to the abdominal walls. It is recognized by its very rapid character and the fact that it does not agree with the pulse of the mother. The pulse will generally be found to be 120 to 140 per minute. In male infants the heart-beat is less frequent than in females.

Quickening.—Motions of the child, popularly known as quickening, are generally felt at about four or four and a half months. The supposition that at this time the fetus acquires individual life is a popular error. The fetus makes movements of various sorts long before this period; but they are not usually strong enough to be felt by the mother, and hence are not noticed. The motions are sometimes so strong as to be exceedingly disagreeable, especially to patients of a nervous temperament. They can generally be readily felt by placing the hand upon the abdominal wall. If they do not happen to occur in a short time, they may be excited by dipping the hand into cold water and laying it upon the abdomen.

This is one of the best signs of pregnancy, and yet it is not an invariable indication, as women often imagine that they have felt motions, when none at all have been experienced, or nothing more than the move-

ments of the intestines from indigestion and moving of gas in the bowels. On the whole, however, this may be considered as a very good indication of pregnancy.

At the end of four months the enlargement can be easily distinguished through the abdominal walls. As the uterus increases in size, it rises out of the pelvis, and often inclines toward the right side.

In the latest stages of pregnancy, vomiting again returns in consequence of the pressure upon the stomach. Toward the conclusion, there is profuse leucorrhœa, and at the very last the uterus settles down into the pelvis again as much as possible.

During this process the uterus increases to more than twenty times its normal size. When fully developed, the fetus generally weighs about seven pounds. The usual variation is from four to ten pounds.

HYGIENE OF PREGNANCY.

Parturition without Pain.—According to the Bible, the pains of childbirth constitute a part of the curse pronounced upon woman in consequence of the transgression of mother Eve in Eden. We are thoroughly convinced, however, that the curse of fashion, and the long list of preventing influences which have for ages been telling upon the human constitution, are far more responsible for the terrible agony frequently attendant upon the bringing of a human being into the world, than the original curse. But regarding pain as a penalty for sin, some over-conscientious people have thought it not only useless but even irreverent and sinful to make any attempt to mitigate the sufferings of childbirth. We do not regard this objection of sufficient force to be worthy of serious attention, and are thankful to be able to say to the thousands of mothers who often go so near to death's door for the purpose of bringing into life another, that it is possible, in a very great degree, to ameliorate their sufferings. We have known of some cases indeed, in which by proper care and treatment during pregnancy the pain was almost entirely banished. In one instance, the lady declared that she suffered no pain whatever. We will now call attention to a few of the most important points to be observed for obtaining this desirable end.

Exercise.—Moderate and regular excerise should be taken during the whole period of pregnancy, even to the last. The habit many women have of sitting or lying most of the time for several months

is a very injurious one, as the muscles become weak, while the general health is seriously impaired. Childbirth is a process which is chiefly due to muscular action. In the performance of this act, the muscles of the abdomen and other parts of the trunk, as well as the womb, are involved, and hence anything which weakens or strengthens the muscles will materially affect the parturient process. Some of the easiest childbirths we have ever known were in the cases of poor women who were obliged to do their own house-work, and continued to do so up to the very time of confinement.

When the patient is for any reason too feeble to walk, ride, or take much vigorous exercise of any kind, daily passive exercise should be given in the form of massage and Swedish movements. Care should be taken never to over-do the matter, however, so as to occasion exhaustion.

At certain periods, as about the third or seventh month, special care to secure rest and quiet should be observed, owing to the liability to miscarriage at the former period, and premature birth at the second.

Diet. The food should be nourishing, but simple and unstimulating. Tea, coffee, beer, ale, porter, and stimulants of all kinds, should be avoided. Little if any meat should be taken. Inflammation or degeneration of the kidneys is a not very infrequent occurrence in pregnancy, and is encouraged by the use of meat. The "longings" for various articles of food (many of which are of an unwholesome character) experienced by many women when in this condition, should not be considered an imperative indication of what should be allowed. The idea that the infant will be "marked" or possess some deformity if "longings" are not satisfied, is an error. The patient should be denied unwholesome articles, no matter how strong the craving for them, as the desire for them cannot change their character or their relations to the body. Such food as oatmeal, cracked wheat, and other whole grain preparations, together with an abundance of fruit, should be freely used, not only as a means of securing proper activity of the bowels, but because these foods furnish the elements most essential to nourish the developing infant.

Dress.—The dress should be suitable to the season, the body being clad in such a manner as to secure thorough and equable protection. It should not constrict the body of the wearer in any part, particularly about the waist. The Grecian lawgiver Lycurgus made a law re-

quiring all women when pregnant to wear very loose clothing. The ancient Romans enacted laws to the same effect. When the enlargement of the abdomen becomes very great, the wearing of a wide bandage cut to fit the abdomen and applied in such a way as to support it somewhat, will be found very conducive to the comfort of the patient.

Bathing.—General baths should be taken as often as necessary for cleanliness, as from one to three times a week. Sitz baths are especially advantageous. They should be taken all through the period of gestation, two or three times a week, and during the last few weeks of pregnancy should be taken daily. This is a most excellent means for relieving many of the local ailments from which women suffer during this period, especially those who are also subject to chronic disease of the womb. We do not know of any one means by which so much suffering at the period of childbirth may be obviated as by the persevering employment of sitz baths. We have often recommended this measure to those who were accustomed to suffer very severely at childbirth, and never without very satisfactory results.

Care of the Breasts.—Attention should be given to the breasts during the period of pregnancy, as by this means much trouble and inconvenience may be avoided after childbirth. They should be carefully protected from the pressure of tight clothing, and if painful may be soothed by means of anodyne liniments. When the nipples are sunken and retracted, they should be frequently drawn out by means of a breast-pump. When the skin of the nipple and of the breast in the immediate vicinity is tender, it may be hardened by applying twice a day a strong solution of alum or borax in whisky, or a solution of sulphate of zinc in the proportion of five grains to the ounce of water.

Mental Conditions.—The mind should be kept in a cheerful frame by kind and cheerful surroundings which will be conducive to evenness of temper. Although a woman in this condition is often in a very unnatural mental state, being fretful, petulant, and peevish, without anything more than an imaginary cause, she should be treated with the utmost kindness, and her mind should be, so far as possible, diverted from the event to which she may look forward with very great apprehension, especially if she has ever suffered a severe labor. The importance of control of the mind on account of the effect of the mental status of the mother upon the impressible mind of the infant has been fully considered elsewhere. See pages 341–344. Another point which should be mentioned in this connection is the propriety of sexual continence during

this period. This is the invariable rule in lower animals, and should be with human beings; a disregard of it is a frequent cause of abortion. An eminent gynecologist remarks that "if any obstetric authorities give their passive or implied consent to intercourse in pregnancy, it is like the story of Moses' concession to the hardness of human hearts."

LABOR, OR CHILDBIRTH.

The duration of pregnancy is generally from 278 to 300 days. At the end of this period, labor or parturition occurs, the process by which the new human being is brought into the world. This process sometimes begins suddenly, but generally gives indications of its approach for some days or at least hours beforehand.

The symptoms of the approaching conclusion are gradually increased irritability of the bladder, with much difficulty in standing or walking, and a change in form of the abdomen which results from the settling down of the womb, leaving the waist smaller, but increasing the prominence of the lower portion of the abdomen a short time before the labor is to begin. Also the external parts become swollen, and there is a leucorrhœal discharge of a thick, clear matter somewhat resembling the white of an egg. Uterine contractions, quite painless in character, are also indicative of the approaching crisis. These contractions at first occur at irregular intervals. When they become regular, the labor has begun. The pains usually begin in the back and sacrum, and extend to the front part of the abdomen. What are termed false labor pains arise from colic, constipation, or irritation of the bowels. They differ from labor pains in being irregular. The term pain, as used in obstetrics, is applied to the spasmodic uterine contractions which take place, together with the pain incident to the same.

Presentation and Position. The term presentation has reference to the particular part of the body which presents at the mouth of the womb. The term position has reference to the location of the presenting part in the passages of the mother. The most usual presentation is the head. Occasionally the other extremity of the trunk takes precedence, forming what is termed a "breech presentation." In still other cases the body lies crosswise of the outlet, a presentation which must be modified in some way, before the infant can be born.

There are various modifications of each of these classes of presentation, that is, other parts of the head may present. In a perfectly natural labor, the vertex of the head is the presenting part. But vari-

ous other parts of the head may be presented, more or less complicating the process.

Stages of Labor.—The labor is divided into three stages.

1. Dilation of the mouth of the womb. This is indicated by cutting pains felt mostly in the back, contractions taking place in the womb only, and gradually growing more and more frequent until the neck of the womb is fully dilated.

2. Expulsion of the child, by means of stronger contractions in which the abdominal muscles contract, as well as the uterus.

3. The expulsion of the after-birth.

The average length of labor in women who have previously borne children is about six hours, the first four of which are occupied in the first stage, and the latter two in the second stage. The after-birth is often expelled at once after the expulsion of the child, but is more often retained five to thirty minutes.

The first and second stages of labor are generally considerably prolonged. Some women, especially those who have broad hips and are well adapted to childbirth, pass through the process of labor in a much shorter space of time, in some cases not more than thirty minutes or an hour being occupied. In women who have not borne children before, especially those who are somewhat advanced in life, labor is often very greatly prolonged.

Various obstacles frequently arise to delay the process; such as, inactivity of the womb, rigidity of the neck of the womb or of the perinæum, and contracted pelvis.

Management of Labor.—In the first place, the services of a competent attendant should be secured. The attendant should, if possible, be a thoroughly trained physician. This is a field in which woman as a physician can fill a very useful sphere. Under no circumstances, except in emergencies, should the important process of parturition be placed wholly in the hands of a midwife whose qualifications, such as she may possess, are wholly derived from experience at the bedside, no matter how large may be the number of cases she may have attended. No one person could by practical experience alone in a life-time acquire all the knowledge necessary to meet the urgent emergencies which are liable to arise at any time in childbirth. The science and art of obstetrics have been developed by a very slow process, and as they exist at the present day, are the result of the

combined experience of physicians during the last two thousand years. Thorough theoretical knowledge is indispensable as a foundation for practical skill. This, of course, must be supplemented by actual experience.

As soon as the first labor pains make their appearance, the physician should be promptly notified, and also the nurse, if the latter is not already in readiness. The room in which the patient is to be confined should be a large, light, airy, and pleasant one. But few persons should be allowed to be present, and these should be such as are desired by the patient, and no others.

So far as consistent, all her wishes should be complied with, so that she may be in as pleasant a state of mind as possible, and that no mental influence may present an obstacle to prevent the completion of the process in which her physical and nervous powers will be taxed to the uttermost. No remark of a discouraging nature should be uttered in the presence of the patient, but hope and confidence should be inspired.

During the first stage the patient need not go to bed. In fact, it is better that she should sit up, as the sitting posture favors the progress of labor. This need not be required, however, if the patient prefers to be in bed. During this stage the patient should quietly allow nature to carry on the work without any attempt to hasten matters by "bearing down," as she may often be encouraged to do by ignorant friends. These voluntary efforts are of no consequence until the neck of the womb is fully dilated. The patient should be allowed to drink cold water, or weak lemonade, as freely as desired; but stimulants should not be given, as they will produce a feverish state of the system without giving any real strength. Hot teas are also better withheld. If the bowels have not moved freely, they should be relieved by a full enema.

During the first stage, the bed should be made in readiness. The feather bed, if in use, should be removed and replaced by a moderately hard mattress. Over this should be placed a large rubber cloth three or four feet wide and six feet long. This should be covered with a comfortable, and a sheet placed over all.

At the beginning of the second stage the patient should go to bed, and her clothing should be drawn up under her arms so that it will not be soiled, the lower portion of the body being protected by a sheet or petticoat. The patient may lie on the left side or on the back. If

the fetus is strongly inclined toward the right side, it is better for the patient to lie upon the left side. During the severe pains which characterize the second stage of labor, the back of the patient should be supported by firm pressure with the hand. The knees should be drawn up, and fixed in such a position as to give them support during the pains. The nurse should take hold of the hand or wrist of the patient to give her an opportunity to make firm traction during the pain. In the intervals between the pains, if the patient is exhausted, she should be allowed to sleep, if possible, in order to recuperate her strength. When the face becomes hot and flushed, it should be bathed with cool water. As the termination of labor approaches, as indicated by the increasing severity and frequency of the pains which at this time often become almost continuous, a supply of hot water should be got in readiness, a large pailful being brought to the bedside, together with a large pan, to be ready for any emergency. A syphon syringe should also be filled with hot water and held ready for use. A bottle of camphor should also be at hand, and a strong cord, made of silk or linen thread twisted and well waxed, with a pair of scissors, should be in readiness for prompt use.

As the head of the child presses severely upon the perinæum, the efforts of the patient should be restrained, to avoid rupture by giving the tissues time to dilate. As soon as the head passes out, the cord should be felt for, as it is sometimes wound around the neck in such a way as to interrupt the circulation as the strain is brought to bear upon it. It also sometimes happens that knots are tied in it, which being tightened by the strain may cut off the supply of blood from the child too soon. If the body is not speedily expelled, the child may be withdrawn by making traction with the finger placed in the armpit.

As soon as the child is born, the hand of the nurse should be placed upon the abdomen of the mother in such a way as to grasp the upper part of the womb, firm pressure being made for the purpose of securing contraction of the organ. This pressure should be kept up until the after-birth is expelled and the bandage applied.

The child should be brought to the edge of the bed as soon as it is born and examined. Generally it at once utters a cry, which indicates that its lungs are filled with air. In case it does not cry and breathes feebly, or only gasps, the hand should be dipped in cold water and placed upon its chest, or the chest may be slapped with the hand. This will generally be sufficient to start the respiration. If the child

is limp and pale, and makes no efforts whatever at respiration, it should be immediately inverted, being held with the head downward, and hot flannels should be wrapped about it. Efforts should be made to excite respiration by compressing the chest at intervals of a few seconds Care should also be taken to see that the mouth is cleared of mucus, though this is not likely to be necessary unless the child has begun to breathe just as the head is being born and has drawn mucus into the throat. If the face has a purplish appearance, the child should be placed at once in a warm bath of a temperature of 105°, or as hot as can be safely used without injury to the skin, and cold water should be dashed upon the chest. Artificial respiration may also be employed at the same time. These measures should be continued for some time and should not be abandoned so long as any evidence whatever of the action of the heart can be obtained. Some cases are recorded in which infants have been resuscitated after apparent death had continued for fully an hour.

As soon as it breathes freely the cord should be tied in two places, the first about two inches from the body, the other about three inches. The child should then be laid upon its side, not on the back, as the side position favors the escape of mucus from the throat. If there should be much rattling in the throat, indicating the presence of considerable mucus, the infant should be laid with its head downward and to one side, so as to allow the mucus to escape.

Washing and Dressing the Child.—If the birth is a premature one, having occurred before the infant was fully developed, the child will be smaller than usual and less well developed; its movements will be slight and feeble, and its cry will be very faint, and the countenance will have a peculiarly old expression. Such a child requires extra care and warmth. It should be carefully wrapped in soft cotton. Very great care will be required in rearing it, as it will at first be too weak to nurse and must be fed with a spoon. It should not be washed and dressed for some time, and should be kept very warm. Care should be taken in washing the child not to expose it to cold so as to produce blueness of the surface, as is often done. It should be recollected that the infant has all its life thus far been accustomed to a temperature of nearly 100°, and being wholly without protection when born, and keenly susceptible, it must suffer quite severely from cold.

The best plan is to place the child in a warm bath, the temperature of which is about blood heat, and then rub it gently with a sponge dipped in warm, weak suds made of castile soap. If the surface is covered with curd-like matter, as is sometimes the case, it should be smeared with a mixture of equal parts of egg and sweet oil beaten up together. After the bath, the surface of the skin should be anointed with a little olive oil or vaseline. If some portions of the curdy matter seem to be firmly adhesive to the skin, no violent efforts should be made to remove them, as they will dry up and disappear in a short time without further attention. After being thoroughly washed, the child should be carefully examined to see that it possesses no deformity. The outlets of the body should receive particular attention, as in some cases the anus or urethra are closed.

The best method of dressing the cord is this: Grasp the cord with the thumb and finger close to the body, cutting it off at the ligature. Squeeze out all its contents by pressure with the thumb and finger of the other hand, keeping a firm grasp upon it with the thumb and finger first applied so as to prevent hemorrhage. Now apply another ligature about an inch from the end of the stump. By this means the cord will be very greatly reduced in size and may be much more easily dressed than when treated in the usual way. In dressing, apply a soft thin muslin bandage, about as wide as the first joint of the thumb, wrapping it around the cord three or four times. Now apply another ligature outside of the bandage, and the dressing is complete. Some prefer to apply for a bandage a soft linen cloth four or five inches square smeared upon the under surface with mutton tallow and having a hole in the center through which the cord is slipped. The cloth is generally scorched, but not much is gained by this practice. By dressing the cord in this way, much offensiveness which arises from decomposition is avoided. It is generally customary to next apply what is termed the belly-band. This is not so important as many suppose, if indeed it is needed at all, which we very seriously doubt. If applied, it should not be drawn too tight, and should be fastened with tapes instead of pins. The best material to use is very soft flannel. When the dressing is completed, the infant should be placed in a warm bed; but it should not have its head covered, as it needs an abundance of air, as well as adults. The infant when thus properly dressed, generally sleeps several hours. When it awakes, it should be applied to the breast. Although the milk is not

yet formed, the efforts of the child to nurse will promote the secretion and will also benefit the child, as the first secretion furnished by the breast, a watery fluid known as *colostrum*, has a slightly laxative effect upon the bowels of the infant, freeing them from their dark green contents, which is termed *meconium*.

The Binder.—After the child has been born and its immediate wants attended to, the binder or abdominal bandage should be applied to the mother. The binder consists of a double thickness of strong muslin cloth or a large linen towel. It should be applied in such a way as to give the mother the least possible amount of inconvenience in the application. In fastening, it should be drawn so as to fit the body snugly and should be pinned from before downward. The bandage is generally applied more tightly than is necessary, the serious consequence of which is not infrequently prolapsus of the womb. In case there is any marked tendency to hemorrhage after the birth, a folded towel should be laid over the womb beneath the bandage. The soiled clothing should next be removed. The patient should be washed and wiped dry, and a dry clean sheet with old cloths for absorbing the discharges should be placed beneath the patient. Care should be taken that the patient is warmly covered. A slight shivering will often occur, but this is generally from nervousness. If the patient has lost much blood or is very weak, the head should be placed low ; only a very small pillow or none at all should be used. The patient should now be allowed to rest. Simple drinks may be allowed at pleasure, but stimulants are rarely called for. The patient will generally fall to sleep if allowed to do so, and will awake after two or three hours very much refreshed. Food may be taken at regular times, but should be simple and unstimulating. Milk, toast, oatmeal porridge, and occasionally soft boiled eggs, should constitute the chief diet. Beefsteak and other meats are better avoided.

Attention should be given to the bowels and bladder. If the bowels do not move by the second day, an enema should be administered. Either tepid water or flaxseed tea may be employed. The bladder should be emptied within a few hours after labor. If there is inability to urinate, a warm fomentation may be applied over the bladder between the thighs, or a warm douche administered. This will usually bring relief, especially the latter measure, the patient being directed to urinate while the douche is being given. If these simple measures do

not succeed, it will be necessary to use a catheter. The bladder should be relieved two or three times a day.

For the first day, the discharge from the womb is of a bloody character; after this, it gradually becomes watery, and in from three to five days it becomes thicker. This is termed the *lochial* discharge, and generally continues from one to three weeks. It is often checked for a day or two at the time when the milk secretion begins. In order to prevent the discharge from becoming offensive, as is sometimes the case, the vaginal douche should be taken at least twice a day; and when the discharge is very profuse, more frequently. The water employed should be quite warm, and should contain a teaspoonful of carbolic acid dissolved in a tablespoonful of glycerine or alcohol to the quart of water. The injection of hot water not only cleanses the parts, but stimulates complete contraction of the tissues, and thus prevents danger from hemorrhage, and hastens the process by which the organ returns to its natural size. A solution of permanganate of potash in the proportion of a teaspoonful of the crystals to a quart of water, is also an excellent injection for use when the discharge is offensive. The carbolic acid solution should be thoroughly shaken before it is used. When blood reappears in the discharges after a few days, it is an indication that the process referred to is not taking place regularly and satisfactorily. This is generally the result of the patient's getting up too soon.

Milk Fever.—This is a term applied to the feverishness which is sometimes present on the third day after confinement. The fever may be introduced by a slight chilliness. The patient has thirst, headache, and frequent pulse. The breasts are generally somewhat swollen, harder than natural, and sensitive; throbbing and darting pains are sometimes felt in them. It is probable that the fever is not the result of the milk secretion, but is due to the absorption of decomposing discharges through the raw surfaces of the vagina and womb. The thorough use of disinfectant injections will generally prevent a recurrence of this fever.

Allowing the child to suck the breast soon after birth, and at regular intervals afterward, is also an excellent means of prevention. The treatment at this time should consist in giving the patient little fluid to drink, feeding her chiefly with solid food, and quenching the thirst by means of pieces of ice. Hot fomentations should be applied to the breasts, and they should be emptied by means of the

breast-pump, unless the child is able to withdraw the secretion by nursing. Sometimes the swelling is so great that the nipple is partly buried, thus interfering with the nursing. In this case the breast-pump should be employed to draw out the nipple, or a nipple shield with a rubber teat should be employed. In the absence of either one, an adult may act as a substitute for the child.

Care of the Breasts.—If the breasts have been properly cared for during pregnancy, little inconvenience will be experienced after childbirth. Care should be taken to wash the nipples carefully with cold water both before and after nursing. If the breasts are large, flabby, and pendulous, it is well to support them by means of bandages properly applied, passing under the breasts and over the neck. This precaution will often prevent inflammation of the breasts.

Sore Nipples will rarely occur when these precautions are observed. If the nipples should become cracked and tender, especial attention should be given to cleansing, both before and after nursing, and an ointment of carbolated vaseline, ten drops to the ounce, should be used, care being taken to remove the ointment before the nipple is given to the child. A solution of tannin in glycerine, fifteen grains to the ounce, is also an excellent application for sore nipples. It should be used twice a day. Another excellent remedy is the following lotion, which should be applied twice a day with a camel's hair brush: Carbolic acid twenty drops, glycerine two teaspoonsful, water a tablespoonful and a half; mix thoroughly. Care should also be taken to give the nipple as much rest as possible, by using the breasts alternately, and making the intervals between nursing as long as possible without doing injury to the child. One of the greatest causes of sore nipples is compression of the breast by improper dressing before and during pregnancy. In some cases, severe pain may be felt whenever the child is taken to the breast, in consequence of neuralgia of the part. This should be carefully distinguished from soreness of the nipple by a critical examination of the breast.

Inflammation of the Breast.—If swelling of the breast occurs, accompanied by redness, pain, and tenderness, the breast should be given entire rest at once. Hot fomentations should be applied until the pain is relieved. The fomentations should not be simply warm, but they should be as hot as can be borne. If relief is not obtained in this way, ice-compresses or an ice-pack should be used. We generally obtain better

results by means of alternate hot and cold applications than by the use of either one alone. If one alone is used, the packs or compresses should be removed once in a half-hour for fifteen or twenty times, in order to prolong the good effect. At the very beginning of the difficulty, before inflammation has really begun, relief may frequently be obtained by carefully withdrawing the milk from the breast and rubbing it gently with the hand. If suppuration occurs, as indicated by the softening of the hard cake which forms when the inflammation rises high, poultices should be applied. It is also best to call a physician in this case, as it is frequently necessary to lance the abscess which has formed. Blisters, mustard plasters, leeches, and other irritating applications, are of no value whatever. Inflammation of the breast may almost always be prevented by care on the part of the mother to avoid allowing the breast to become too full. On this account, regularity in nursing is of great importance.

To Check the Secretion of Milk.—In some cases it becomes desirable that the secretion of milk should be checked. This is especially important in cases of still-birth. The most effective measure for checking the secretion of milk is to require the patient to abstain from the use of fluids of any sort. The food should be of a solid character. The thirst may be relieved by taking small quantities of ice. This should be continued until the fourth or fifth day, when there will usually be no further difficulty. The breasts should be partially relieved of their contents by the breast-pump or other means, but should not be entirely emptied. The application of the ice-pack or cold compresses to the breasts, is also an excellent means for diminishing the secretion. It is also a good plan to apply to the breasts two or three times a day a mixture of equal parts of sweet oil and spirits of camphor, and to keep the breasts constantly covered with a cloth saturated with spirits of camphor.

To Promote the Secretion of Milk.—This must be accomplished chiefly by regulation of the diet and attention to the general health, especially to the improvement of the digestion. The patient should make free use of liquid food, particularly fresh milk, sweet cream, oatmeal porridge, graham gruel, and other whole-grain preparations. Teas of various kinds are of little consequence and do not increase the quantity of milk except by the addition of water. The use of wine, beer, ale, and other alcoholic stimulants is a practice to be in the highest de-

gree condemned, as it not only deteriorates the quality of the milk, but makes the child liable to various diseases. An eminent physician declares that in many instances in which beer and ale are used, the infant is not sober a moment from the time it begins nursing until it is weaned.

Gentle manipulation of the nipple in imitation of the act of milking is in many cases very efficacious in promoting the secretion of milk. By this means, the secretion has been produced in women who had never borne children, and often in young girls and men in such a quantity as to enable them to perform the part of wet-nurse with entire success.

It is said the function of lactation is possessed by many men in Russia. Some years ago a negro slave appeared before the class in a Southern medical college, who had a profuse secretion of milk from one breast, and had acted as wet-nurse for all the children of his mistress.

Getting Up.—No definite time can be set at which it would be safe for every woman "to get up." Some are as able to be up in three or four days, as others at the end of two weeks. The traditional "nine days for lying in," has no substantial foundation. As a general rule, the woman should remain recumbent in bed for a week or ten days. If she has been getting along nicely, she may be permitted to sit up a few minutes after the fourth or fifth day while the bed is being changed and aired; but if the lochial discharge becomes bloody after being up, it is an indication that she should remain in bed some time longer. Getting up too soon after confinement is a frequent cause of some of the most troublesome chronic ailments from which women suffer. The worst of these is enlargement of the womb, due to *sub-involution*, a condition in which the organ fails to return to its natural size, remaining permanently enlarged. When everything progresses well, this process generally takes place in six or eight weeks. During this time the patient should exercise very great care to avoid exposure of any kind. Getting the feet wet, being chilled, overexertion of any kind, either mental or physical, and anything which has a prostrating effect, will be likely to check the natural retrograde process, the prompt and thorough performance of which is very important. Special care should be taken so long as the lochial discharge is still present. Care during this period will often save the patient from many years of suffering.

Hemorrhage after Labor.—Sometimes the womb does not contract so firmly as it should after childbirth, in consequence of which its greatly dilated blood-vessels remain open, and frightful hemorrhage is the result. This is also sometimes caused by only partial separation of the after-birth, the remainder of the after-birth being attached so firmly that it cannot be expelled by the contractions of the organ.

Treatment.—When the hemorrhage is due to partial attachment of the placenta, the after-birth should be removed as quickly as possible. In order to effect this, it is sometimes necessary for the physician to pass his hand into the womb. The necessity for this measure may almost always be obviated by the employment of the hot-water douche at as high a temperature as can be borne by the patient. Where hemorrhage is due to failure of the uterus to contract, the best remedy known is the hot-water douche. The syphon syringe, or some other efficient instrument of the kind, should be in readiness for use in an emergency of this sort. The water employed should be as hot as can be used without burning the tissues. This remedy is generally quite promptly effective.

Uterine contraction may also be stimulated by alternate hot and cold applications to the abdomen over the womb, and to the breast. Care should be taken by the nurse to examine the patient frequently after childbirth to see that there is no unusual hemorrhage.

Retention of the After-Birth.—The condition referred to in the preceding paragraph sometimes occurs in consequence of failure of the uterus to contract properly after the child has been born, or in consequence of an unusually firm attachment of the placenta to the internal walls of the uterus. As previously remarked, the after-birth is generally expelled from five to thirty minutes after the child is born. When the uterine contractions suddenly cease after the child is born, so that the placenta is not expelled, the remedies suggested for inactivity of the womb should be applied, one of the most effective of which is the hot-water douche. In case these are not effective, it becomes necessary for the physician to pass two or more fingers into the womb and by gradually working them under the placenta loosen it and bring it away. This is a frequent cause of hemorrhage after childbirth, the treatment for which has already been given.

Inactivity of the Womb.—When labor is delayed in any of its stages in consequence of failure of the uterus to contract with suffi-

cient vigor, it is necessary to adopt means for the purpose of stimulating the contractions. Among other simple measures which may be applied with advantage are the application of cold water to the breast and over the abdomen. Sometimes alternate hot and cold applications are more effective than cold alone. Sometimes the inactivity is due to exhaustion, and rest is needed. In such cases, the patient should be allowed to sleep, if possible, and should be given food. In case of very great weakness, a small quantity of some form of local stimulant may be taken without detriment, and probably with advantage.

Electricity is a very useful agent in cases of this sort. The positive pole should be applied to the back and the negative over the womb. The hot vaginal douche is one of the most effective measures for use in these cases.

Rigidity of the Womb.—In some cases labor is delayed by a failure of the neck or mouth of the womb to dilate with sufficient rapidity. This is sometimes due to an early rupture of the membranes, in consequence of which the "bag of waters," which precedes the child as it passes downward, does not perform its usual and important function of dilatation. It is also sometimes due to an unnatural condition of the tissues of the neck of the womb. In these cases the pains are very severe and acute, being felt mostly in the sacrum. The patient is feverish and very restless, the pulse becomes very frequent, and the patient suffers great distress. By internal examination, the os, or mouth, of the womb is felt like a hard ring.

Treatment.—The best remedies for this condition are the hot sitz bath and the hot vaginal douche. They may be continued for several hours if necessary without detriment. Large hot enemas are also very useful in this condition. They should be retained as long as possible.

Rigidity of the Perinæum.—In this condition, the perinæum, or portion of the tissue between the vagina and rectum, does not dilate as it should, but the central portion bulges forward while the upper edge remains hard and unyielding. This is the most frequent cause of rupture of the perinæum. The best remedies are the hot sitz bath and hot fomentations to the parts. A very excellent way of applying moist heat is by means of a large sponge dipped in hot water, and applied as hot as it can be borne. The hot-water douche and the hot enema are remedies of very great value. The employment of daily

sitz baths during the later months of pregnancy is a very excellent means of preventing this complication.

After-Pains.—In some cases, contractions of the uterus continue for a longer or shorter period after labor is completed. When these contractions are so severe as to give the patient great discomfort, hot fomentations should be applied over the abdomen. The hot vaginal douche is also an excellent means of relieving after-pains by producing firm contraction of the womb.

The Use of Ergot.—This drug, once very popular, indeed thought to be almost indispensable in all cases of childbirth, is now charged by many of the most eminent obstetricians with being the cause of much increase of suffering during childbirth, and serious subsequent disease. It has often been the cause of ruptures of the neck of the womb and of the perinæum by producing too rapid labor. If used at all, it should be only in difficult labor. It is probable that its use can be dispensed with in nearly, if not all, cases, without detriment to any, and with benefit to many.

The Use of Anæsthetics.—The employment of anæsthetics in childbirth is a practice of very recent date. When it was first introduced, many fears were expressed that harm would result to either mother or child, or both. Some opposed the measure on moral grounds, claiming that the pains of child-birth were part of the curse pronounced upon Eve, and that the use of anæsthetics for the purpose of mitigating the pain was preventing execution of the penalty. Notwithstanding the opposition, however, some form of anæsthetic, generally chloroform, is now very largely used, especially in prolonged and unusually painful labors. If the patient is strong and vigorous, and the labor is not unusually severe, there is no occasion for the use of the anæsthetic; but if the contrary of this is true, there is no question but benefit, as well as comfort, may be derived from the judicious use of chloroform. It is unnecessary to produce profound anæsthesia, or to bring the patient fully under the influence of the drug, and hence there is little or no danger of immediate injury to the patient. Neither have those opposed to the use of chloroform been able to show that injury results to the child. It should never be used, however, without the advice and constant supervision of the physician.

Twins.—Twin pregnancy may be suspected when the mother is unusually large, or when there is a double appearance of the enlarged

abdomen. Twin birth occurs in proportion of about one to seventy or eighty single births. The usual unpleasant symptoms which occur during pregnancy are greatly exaggerated in twin pregnancy. Complicated labors are also somewhat more frequent in twin births. The birth of the second child generally succeeds that of the first very quickly, but cases have been observed in which several hours and even days have elapsed before the birth of the second child.

Abdominal Pregnancy.—It sometimes happens that the impregnated ovum finds its way into the abdominal cavity and there undergoes development; fortunately, occurrences of this kind are very rare. In many cases, the fetus becomes surrounded with a cyst, by means of which it is separated from the rest of the body, and sometimes may be thus preserved for years in a degenerated condition.

In other cases, the different portions of the fetus gradually work out through the bowels, or even through the abdominal wall. In still other cases, decomposition and suppuration take place, the system becomes infected with the products of decomposition, and the patient dies of blood poisoning. Cases have occurred in which, by the performance of a surgical operation, a fully developed child has been removed from the abdominal cavity, the lives of both mother and infant being saved.

DISORDERS OF PREGNANCY.

Constipation.—Can generally be relieved by regulating the diet, which should consist chiefly of fruits and grains. Drinking a glass of cold water before breakfast is an excellent means of securing a regular evacuation of the bowels. In case these measures are insufficient, the enema may be resorted to. As small a quantity of water should be used as will secure the desired movement. It is also better to employ water at a moderately low temperature, so as to keep the blood-vessels of the part well closed, as a means of preventing hemorrhoids. A very excellent plan by which the dependence upon the enema may be somewhat avoided, is to inject into the rectum at night, just before retiring, two tablespoonsful of water containing ten drops of spirits of camphor. This will often provoke a movement of the bowels at once. If the fluid is retained over night, it will be quite certain to secure a prompt movement. Figs, stewed prunes, and other fruits of a laxative character, if freely used by the patient, will generally obviate the necessity for other means. It is very unwise to become dependent upon the use of the enema, and hence a persevering effort should be made to secure healthy activity of the bowels by regulation of the diet.

Piles, or Hemorrhoids.—This troublesome difficulty is a very frequent accompaniment of pregnancy. It is generally the result of constipation of the bowels. When this is the case, the bowels should be kept loose by means of enemas of linseed tea, or soap-suds. In case there is a tendency to hemorrhage from the rectum, an ointment containing a dram of tannin to an ounce of vaseline should be used after each movement of the bowels.

Morning Sickness.—Nausea and vomiting in the morning soon after getting up, is one of the early symptoms of pregnancy, and is also characteristic of its later stages. The best method of treatment is to give the patient something to eat before getting up in the morning, as a bowl of brown bread and milk. The patient should eat at least fifteen or twenty minutes before attempting to get up, and upon arising should dress quickly and go out in the open air for a walk, unless the weather forbids.

The abdominal bandage is a very excellent means of relieving this unpleasant symptom. It should be worn constantly for a week or two,

and then omitted during the night. Daily sitz baths are also of great advantage. In many cases, electricity relieves this symptom very promptly. When nearly all kinds of food are rejected, milk and lime-water may be employed in very urgent cases in which the vomiting can not be repressed, and the life of the patient is threatened. The stomach should be given entire rest, the patient being nourished by means of nutritive injections. See Page 737. Fomentations over the stomach and swallowing of small bits of ice, are sometimes effective when other measures fail.

Various other disturbances of digestion occur, due to the development of various forms of dyspepsia. Severe pain in the stomach is often a very ominous symptom. When present, the attention of the physician should be called to the fact.

Disorders of the Bladder and Womb.—Various disorders of the bladder and urine are frequent during the pregnant state. Irritability of the bladder, or painful micturition, incontinence of urine, retention of urine, are the most common troubles of this sort. Irritability of the bladder is most generally due to neglect to empty the bladder of its contents with frequency and regularity. In some cases, the bladder troubles are due to displacements of the womb existing before pregnancy occurred. This is especially true of incontinence of urine, which generally results in these cases from pressure upon the bladder by the enlarged womb. Prolapsus of the uterus and retroversion are difficulties which sometimes complicate pregnancy and require the attention of the physician. The irritability of the bladder is generally relieved by copious water-drinking, the free use of fruit, and relieving the organ regularly once in five or six hours. The recumbent position is the best remedy for incontinence of urine. Sometimes this difficulty may be prevented by the use of the abdominal bandage for the purpose of holding the uterus in place.

Itching Genitals.—This difficulty should be treated according to directions given elsewhere See Page 1330. It is almost always accompanied by leucorrhœa, which should also receive proper treatment.

Vaginal Discharges. The discharges which take place from the vagina during pregnancy are quite various. The most common is a profuse mucous discharge, or leucorrhœa, the best remedy for which is the daily use of vaginal injections administered with the syphon syringe. The water should be at the temperature of the body, and little force

should be employed. Various remedies elsewhere ecommended for leucorrhœa are useful in this form of the difficulty.

Occasionally strong gushes of a watery fluid occur, followed for some time by a dribbling of the same. The remedy for this difficulty is complete rest. Fluid discharges occurring during pregnancy should receive prompt attention, as they may indicate a liability to miscarriage.

Varicose or Enlarged Veins.—Varicose veins of the lower extremities are of very frequent occurrence in pregnancy, being produced by the pressure of the enlarged womb upon the veins which return the blood from the lower extremities. Sometimes a similar enlargement of the veins of the external organs of generation on one or both sides also occurs.

Treatment.—The limbs should be supported by means of an elastic bandage, or elastic silk stocking, whenever the patient is on her feet. A flannel bandage made of strips of flannel torn across the web so as to give some elasticity may be used in place of the rubber bandage The bandage should be applied evenly, from the toes upward, as high as necessary, even extending to the body in some cases. When the patient is sitting or lying down, the feet should be elevated a little higher than the hips if possible. If the labia becomes very much swollen, the patient should remain as much as possible in a horizontal position, in the meantime pressing out the blood from the distended veins by steady compression with the hand. A pad and bandage can be adjusted in such a way as to answer the same purpose.

Dropsical Swelling of the Feet and Limbs.—General dropsy, indicated by swelling of the limbs so that pitting is produced by pressure with the finger, and puffiness of the face, is a very serious complication of pregnancy, indicating inflammation of the kidneys. This condition should receive prompt attention. The most useful remedies are such as will induce active perspiration. The patient should be allowed no animal food except milk, the diet being made up chiefly of fruits and grains. When the swelling is confined to the feet and limbs, it may be treated by means of the bandage, or the elastic silk stocking.

Difficult Respiration.—Shortness of breath or difficulty of breathing, are frequently among the most prominent inconveniences of the latter stages of the pregnant state. Patients subject to asthema, and suffering with organic disease of the heart, suffer much more than do others. The interference with respiration is produced in most cases by

crowding upward of the abdominal organs against the diaphragm, thus preventing its descent, and making it impossible for the patient to take a full inspiration. Shortness of breath is sometimes due to poverty of the blood.

The first class of cases can be relieved but little, as the cause cannot be removed. Some advantage may be derived, however, by the application of faradization to the chest, for the purpose of strengthening the respiratory muscles. In cases in which the difficulty arises from debility, the patient should receive such treatment as will secure improvement of nutrition.

Fainting in some cases occurs quite frequently during the first few months of pregnancy. This is simply due to the morbidly susceptible condition of the nervous system during this period, very slight disturbances being sufficient to occasion intense mental excitement and profound disturbance of the circulation.

Headache and Disturbance of Sight.—Severe continuous headache and various disturbances of vision, such as blurring, double sight, etc., are sometimes of quite serious import. These cases should be investigated by a competent physician. Whenever these symptoms occur, a careful examination of the urine should be made, to determine if albumen is present. The headache may generally be relieved by cool or hot compresses and derivative measures.

Neuralgia.—The neuralgia of pregnancy is sometimes one of the most disagreeable features. It may assume a great variety of forms. It most frequently affects the face. Very often the teeth are the seat of the pain.

Treatment.—Hot fomentations, hot poultices, electricity, and other measures elsewhere recommended for neuralgia, are equally useful in these cases.

Miscarriage and Abortion.—These terms are applied to cases in which the fetus is discharged before the seventh month. Miscarriage occurs most frequently in fleshy persons and those who are subject to menorrhagia, or profuse menstruation. Nearly all the severe acute diseases may give rise to miscarriage. Violent excitement or exertion, either mental or physical, displacements of the uterus, together with chronic inflammations and tumors of the organ, falls, and other violent accidents, severe vomiting or coughing, bad hygiene, and sexual indulgence, may be enumerated as the principal causes of abortion.

The symptoms of abortion within the first two weeks do not differ very greatly from those attending menorrhagia. Not infrequently miscarriages occur at this period without the woman being conscious of the fact. In the third or fourth month, there is considerable hemorrhage, and some portion of the fetus is likely to be retained in the womb, where decomposition not infrequently takes place, imperiling the patient's life. Criminal abortion is very frequently attended by fatal results. The moral aspect of this question has been fully considered elsewhere, page 355. Miscarriage occurring as late as five or six months, very closely resembles labor.

Treatment.—In cases in which abortion habitually occurs at a certain time, complete rest should be enjoined upon the patient. She should not be upon her feet at all until the dangerous period is past. Sexual excitement should also be strictly prohibited. In case flooding occurs, or other symptoms of abortion, the patient should at once go to bed and apply cold compresses over the bowels, and tepid injections of tannin or a decoction of white-oak bark into the vagina. Abortion or miscarriage is much more likely to be followed by diseases of the womb than natural labor, and hence every possible precaution should be taken to prevent exposure in these cases.

Premature Labor.—This term is applied to all cases of premature childbirth occurring after the beginning of the seventh month. The causes are essentially the same as those which produce abortion. The rules already laid down for the management of labor at full term, are equally applicable to premature labors. It should be remarked that extra preparations should be made, to give the feeble infant likely to be born in these cases, the best possible chances for life.

Death of the Fetus.—When many symptoms of pregnancy which have been distinctly present disappear, there are grounds for suspicion that death of the fetus has been occasioned by some cause. The causes which occasion death of the fetus are essentially the same as those which give rise to abortion and premature labor. The fetus is generally expelled a week or ten days after it dies.

Molar or False Pregnancy.—Two forms of false pregnancy occur. In one of these, after the usual symptoms of abortion, and with considerable pain and hemorrhage, a fleshy body of varying size is expelled, which may be shown by a close examination to be an undeveloped fetus. This form of false pregnancy is attended by little danger.

In the other form, the symptoms of pregnancy continue up to the fourth or fifth month, though no fetal movements are ever felt. The abdominal walls are generally extended more than at the same time in true pregnancy. After a time, a large quantity of bloody serum is discharged, along with severe hemorrhage, the escaping fluid containing small bladder-like bodies resembling grapes. This is known as the hydatidi-form. This form of false pregnancy is by no means free from danger.

Flooding.—The patient should at once go to bed. Cold compresses should be applied over the lower part of the bowels. She should be given an abundance of cold water to drink. Cold water may also be injected into the rectum with advantage. In case of a severe hemorrhage after miscarriage or premature labor, the best known remedy is the prolonged hot-water vaginal douche.

Puerperal Convulsions.—This is a very serious disease which may occur during pregnancy, or during or after labor. It generally occurs in patients who have suffered with disease of the kidneys during labor, as shown by swelling of the feet and limbs, puffiness of the face, and the presence of albumen in the urine. Among the first symptoms are disorders of vision, as blurred sight, double vision, etc. The attack generally begins with strong muscular contraction, in which the muscles of the limbs become rigid, and respiration ceases through rigidity of the muscles of the chest. This is followed in a short time by spasmodic twitching of the various muscles. Sometimes the contractions of patients suffering with this affection are frightful. The most common, and probably the sole cause of true puerperal convulsions, is poisoning of the blood by the elements of the urine which are not eliminated on account of congestion or inflammation of the kidneys. Sometimes the attacks assume a character resembling that of epilepsy. These cases are probably due to some other cause.

Treatment.—The preventive treatment of this disease is by far the most important. It consists, first, in thorough attention to the laws of hygiene relating to the pregnant state. The diet should be chiefly fruit, and farinaceous articles of food. Sugar and meat should be carefully discarded. As soon as the swelling of the feet and puffiness of the face are observed, the patient should take frequent warm baths with wet-sheet packs, vapor baths, and other treatment which will induce active sweating. Considerable quantities of water should be daily drank,—in

fact, the general course laid down for Bright's disease of the kidneys should be carefully followed.

At the time of the attack, vigorous efforts should be made to relieve the system of the noxious elements by which the brain and nervous system is being poisoned, through the medium of perspiration. If possible, the patient should be given a hot blanket pack, hot bottles being packed around her to induce copious sweating. If the bowels are constipated they should be relieved by a warm enema. A spoon handle wrapped with cloth should be placed between the teeth to prevent the tongue being bitten. The patient should not be violently restrained, but should be gently prevented from injuring herself. When coma is present, as is frequently the case, cold or iced compresses should be applied to the head. Hot and cold applications should be made to the spine. If these measures do not bring relief, chloroform may be used to subdue the spasms. This remedy is generally effective. When the contractions have ceased, energetic measures should be taken to prevent their occurrence, by exciting activity of the kidneys and skin.

Puerperal Fever.—This disease is responsible for a large number of deaths following confinement, and a great multitude of chronic, diseased conditions, by which women who have suffered from it are crippled and maimed, many times for life. It is now pretty generally conceded that severe fever following confinement is generally the result of absorption into the system of some of the products of the decomposition taking place in the generative passages. Having gained access to the blood, the diseased germs multiply in great numbers and soon pervade the whole system. In addition to the general fever, inflammations of the womb or its surrounding tissues and the ovary and other organs are very likely to occur, leaving adhesions, consolidations, abscesses, indurations, etc.

Treatment.—The best treatment of this disease is prevention. If the parts are thoroughly washed out two or three times a day with a disinfectant lotion, by means of a syphon syringe, the thorough cleansing being kept up continuously until the lochial discharge has entirely ceased, there is little chance for the germs of disease to find an entrance into the system, and puerperal fever will not be likely to occur. A physician attending one case of the disease will be very likely to convey it to other patients whom he may visit. The fever should be treated on the general principles laid down for the treatment of fever elsewhere.

FEEDING AND CARE OF INFANTS.

The fact that fully one-third of the human family perish before the age of five years is sufficient apology for devoting a brief section to the consideration of this subject. Notwithstanding the immense number of physicians, nurses, and mothers, who have had much experience in the rearing of children, the amount of accurate information on the subject of infant care and feeding possessed by the general public is very meager. We shall endeavor to summarize as precisely as possible the most reliable information to be gathered from experience and research on this subject.

INFANT DIET.

Carefully collected statistics show beyond room for reasonable doubt that the most active cause of infantile disease is improper feeding. This cause is particularly active during the warm season of the year, which occasions the immense number of deaths from various digestive disorders at this period. The careful observance of the following suggestions will rarely fail to secure immunity from disorders of the digestive organs :—

1. Milk is the natural and proper food for children from infancy to the age of twelve or eighteen months. Starchy foods cannot be digested, owing to the fact that the digestive element of the salivary secretion is not formed in sufficient quantity during the first few months of life to render the child able to digest farinaceous foods, such as potatoes, rice, fine-flour bread, and the like.

2. As a general rule, an infant should be fed once in two or three hours during the daytime and once at night until one month old. After this time it should not be fed at night, and it should take its food no more frequently than once in three hours during the daytime until four months of age. Between four and eight months, the intervals should be gradually prolonged to four hours. After this time the fourth meal should be gradually dropped off, so that at twelve months the child will take its food but three times a day.

3. If the child is deprived of its natural food, a healthy wet-nurse should if possible be secured,—at least until the child is two or three

months old. When a suitable wet-nurse cannot be secured, milk from a healthy cow constitutes the best food. Care should be taken in the selection of cow's milk, that being preferred which is obtained from a cow which has calved two or three months previously. The health and care of the cow, particularly the character of her food, are matters of importance which should receive attention, as there is no doubt but that consumption is frequently communicated to infants from cows whose lungs have become diseased through confinement in close stalls with foul odors, and deficient and improper food. Cow's milk should be diluted at first to one-half, the proportion being gradually increased as the child's stomach is strong enough to bear it. Pure water, lime-water, barley-water, and thin well-boiled and strained oatmeal gruel, may be used to dilute the milk. The object of the dilution is, first, to render it more nearly like mother's milk in the proportion of nutriment which it contains, and second, to render it less liable to form hard curds in the stomach, which are very likely to occur when the milk is taken undiluted.

4. Cow's milk, or other fluid food, is best given to an infant with a proper nursing bottle. The best forms of nursing bottles are those which are furnished with rubber caps such as are shown in Figs. 350 and 351. The cap should be removed and well cleansed with warm water in which soda or saleratus has been dissolved in proportion of a teaspoonful to a pint each time the bottle is used. Both the nursing bottle and the rubber nipple should be kept immersed in a weak solution of soda when not in use. They should also be cleansed the second time just before the child is fed. Neglect to observe this precaution is one of the most common causes of stomach disturbances.

Fig. 350.

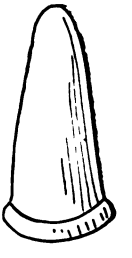


Fig. 351.

5. The diet of the mother while nursing is of very great importance, as anything that will disturb the system of the mother will affect that of the nursing infant more or less. Her food should be nourishing, simple, and wholesome. Stimulants of all kinds, whether in the form of alcoholic drinks or irritable condiments, should be carefully avoided. Pastry, desserts, ice-cream and confectionery, and all similar articles, should be wholly avoided. Oatmeal porridge or milk

and the various whole-grain preparations, eggs, and, with those accustomed to its use, a moderate allowance of meat, together with an abundance of ripe fruits, constitute the best diet. With reference to increasing and diminishing the supply of milk by regulation of the diet, see paragraph on this subject elsewhere. Vegetables, such as cabbage, turnips, and carrots, together with peas, beans, and onions, which are very likely to produce colic in the child should be carefully avoided.

6. Feeble infants, especially those who are born prematurely, will need to be fed a little more frequently than others, and will require extra care.

7. The interior of a child's mouth, as well as its lips, should be carefully wiped free from milk or other food after feeding, a moist cloth being used for the purpose.

CAUTIONS RESPECTING INFANT FEEDING.

1. Too frequent feeding is a very common practice, and is one of the most active causes of colic and various other forms of indigestion in children. Many mothers wonder why the children do not grow fleshy notwithstanding they have a voracious appetite and eat nearly all the time, when the simple reason is that the food taken is not digested and assimilated on account of the weakened and disordered state of the digestive organs. Frequent feeding at night is not only unnecessary, but exceedingly harmful. After the first month or two, infants require no food at night. If they are properly educated upon the matter of diet from the start, they can be managed without any difficulty.

In order to break children of the habit of eating in the night when the mothers have been in the habit of nursing them at all hours of the night as well as the daytime, a little warm water may be given in the nursing bottle instead of allowing food. This will often satisfy the child's cravings so that it will go to sleep.

2. Overfeeding is a much more frequent error than the opposite Very frequently children are allowed to take too much at a time. This is the most common cause of vomiting in infants. Fortunately their stomachs are so constructed that the surplus of food may be easily expelled; but sometimes this is not the case, and often very serious disorders of digestion result. The child should be removed from

the breast when its hunger has been satisfied, and should not be urged to take more when it is evidently satisfied.

3. The child should never be allowed to sleep at the breast, or with a nursing bottle to its mouth.

4. The child should never be put to the breast to stop its crying. Children cry in consequence of disturbances of the stomach much more often than from hunger. The child will often nurse as though hungry when the stomach is already full of undigested food, being permitted to do so by the pain or discomfort which it suffers. Children often cry in consequence of the irritation of pins, but no matter whether any other cause for crying should be found or not, the child should not be nursed except at its regular hours.

5. No other food but milk, except such fluids as are used to dilute cow's milk, should be used until after several teeth have made their appearance. As a general rule, bread and other farinaceous food cannot be digested before the age of seven or eight months. Meat should never be given to children until after they have acquired a sufficient number of teeth to masticate it thoroughly, and then should be allowed only in very small quantities once a day. Young children are very much better off without meat as a general rule.

6. Children should never be given sugar-teats, candies, sweetmeats cheese, nor pastry. The habit many nurses have of feeding an infant sugar and water every hour or two, during the first one or two days of its life, is a practice which cannot be condemned too strongly. The same may be said to be the cause of colic and other disturbances. Catnip tea and similar other decoctions used at this time, are exceedingly harmful, not only disturbing the stomach and giving the child discomfort, but preventing the natural desire for food and depriving the mother of the benefit to be derived from suckling the child. Placing the child early to the breast is one of the best means of preventing "gathered breast" and securing a plentiful supply of milk. The practice that many people have of taking young children to the table and feeding them bits of almost everything on the table cannot be too strongly discountenanced. It is one of the most prolific causes of digestive disturbances in children.

8. As a general rule, menstruation and pregnancy, either of which may occur during nursing, are likely to affect the child injuriously, and it requires weaning. As a general rule, a woman should discontinue

nursing upon the occurrence of conception or pregnancy. Three lives may be affected injuriously by a neglect of this rule.

9. Special care must be taken in the warm season of the year of children that have been weaned or that have been raised on the bottle, to avoid feeding sour milk or milk that has become slightly changed by standing. In very hot weather, milk sometimes begins to sour in a very short time. This is especially the case when milk pans or cans have not been cleansed as thoroughly as they should be. If either the mother or nurse in charge of an infant would obtain a "test paper," which can be found at any drug store, and always test the child's milk when there is any possiblity of its being sour, many cases of illness and death would be avoided. The process of testing is a very simple one, it only being necessary to observe that when the milk is acid the blue paper will be turned red, and when it is sweet, no change will occur.

10. Another danger to which children are exposed is the use of milk which has been poisoned by standing in pans made of tin adulterated with lead. This danger is now becoming quite a serious one. Infants are more susceptible to injury than adults on account of their weakness and little vitality.

11. Many mothers have sacrificed their children by attempting to rear them upon the various patented baby foods sold in the stores. A majority of these foods are starchy preparations which contain little or no nourishment valuable for infants. Some of them, particularly the various preparations made according to the directions of the eminent German chemist, Prof. Liebig, are useful, but not more so than well boiled oatmeal or graham gruel with the addition of cow's milk. Directions for feeding infants whose digestive organs are very badly disordered, are considered in connection with the diseases in the treatment of which they are specially necessary.

12. Sexual excesses have a very damaging influence upon the nursing infant.

13. A nursing mother should never give way to fits of anger or depressing emotions of any sort, but endeavor to improve and sustain her general health in every possible way by proper diet, daily exercise in the open air, abundance of sleep, avoidance of overwork, etc.

Weaning.—Under this head it is important to call attention to the following points:—

1. The proper time for weaning a healthy infant is at about one year of age. Very weakly children sometimes require longer nursing. The custom practiced by some women of prolonging the nursing period to two years or more is injurious to both mother and child.

2. The process of weaning should be conducted gradually. At the age of eight or ten months the child may be fed bread and milk, or oatmeal porridge once a day, this article being substituted for mother's milk. As it grows older, the preparation of these articles of food may be increased, and some other articles, as perfectly ripe fruit, with now and then a portion of a baked potato, simple soups, etc., may be given. Graham bread should be invariably used in preference to fine flour bread. If necessary, the coarsest of the bran may be sifted out. By the adoption of this plan, at the end of twelve months nursing may be discontinued altogether without the child suffering any serious consequences.

From this time, the diet of the child should still consist chiefly of graham bread and milk, baked potatoes, ripe fruit, and equally simple articles of food. Meat, coarse vegetables, butter, tea and coffee, mustard, pepper and other condiments, pastry, preserves and sweets of all kinds, rich puddings and sauces, dessert, and all articles difficult of digestion, should never be given to young children; indeed, the world would be vastly better off if these articles were rarely if ever taken either by older children or adults. When the child is costive, oatmeal porridge as a principal article of diet is an excellent means of regulating the bowels. In making oatmeal porridge the milk should not be boiled, but should be added after the porridge is done.

3. As a general rule, children should not be weaned in hot weather, as slight changes in diet are often sufficient to produce serious disturbances at this season of the year.

GENERAL CARE OF INFANTS.

The Bowels and Bladder.—The first movement of the bowels of a newly born child is of a green color. After this, the discharges should be uniformly of a bright yellow color. If the bowels have a slight tendency to constipation, they should be thoroughly kneaded several times a day, especially while the child is taking its morning bath. The cold compress worn about the bowels is also an advantageous measure. Giving the child one or two tea-

spoonsful of cold water half an hour before nursing is also a useful measure. Care should be taken that the bowels and bladder move properly; and if there is any interruption of the functions of these organs, proper measures for relief should be resorted to at once.

Clothing.—The legs, arms, and neck, as well as the trunk, should be thoroughly clad with a soft flannel gown, in addition to which a woolen bandage should be placed about the trunk. Care should be taken in placing the binder not to draw it too tight, as this is one of the most common causes of prolapsus of the rectum, a not infrequent condition in young children. The child should not be clothed too warmly, as debilitating perspirations may be induced. The temperature of the room should be kept at about 68° or 70°, and a proper degree of moisture should be supplied by keeping a vessel of water upon the stove, or keeping the water-pan of the furnace supplied with water. Too much clothing should not be worn upon the head nor about the neck, as these parts are thereby rendered unnaturally sensitive and more liable to cold.

Bathing.—The daily bath is of great advantage to children, and soon comes to be much enjoyed by them. As a general rule, there is no danger that the child will be weakened in the slightest degree by taking a tepid bath every morning before its breakfast. The temperature of the water employed should first be about that of the body, but it should be gradually lowered, so that after a few weeks it will not be over 80° to 90°. Many physicians recommend a still lower temperature. It may be said that the cooler the water employed the more thorough is the protection against taking cold. No fears whatever need be entertained that the child will contract a cold by taking a cool bath. The whole surface of the body should be thoroughly rubbed. It is also well to anoint the skin as often as every other day with some fine unguent, as olive or cocoanut oil, or vaseline. Fine castile soap should be used in the bath every day or two.

Sleeping.—A healthy child, during the first few weeks of its life, sleeps nearly five-sixths of the time. The infant should be taught to go quietly to sleep while lying in its crib, without rocking, petting, or carrying in the arms. If the child is taught correct habits at the start, it will give much less trouble than if humored and petted until it makes unnecessary demands. The face of a child should never be covered during sleep, as it needs an abundance of fresh air as well as older persons. As a general rule, it is better that the infant should not sleep in the

same bed with an older person, even its mother. In cold weather, when it needs additional warmth, one or two large bottles filled with warm water may be laid beside it. Its crib should be well padded upon the inside, so as to protect it from receiving injury from the hard frame-work.

Exercise.—Although it is unnecessary that infants should be constantly carried about, and is injurious to them as well, it is important that young children should be taken up several times a day and carried about for a few moments. This is especially true in the case of very feeble children. If allowed to lie too long upon the back, congestion of the lungs may be occasioned. After an infant is a month old, it may be safely taken out in pleasant weather at any season of the year, provided it is properly protected. In cold weather it is better that the child should be carried in the arms instead of being drawn in a cart, as there will be less liability of its getting chilled. It should also be exposed to the sun daily, or as often as possible. Care should be taken to protect the infant's eyes from the glare of sunlight.

Nurses should use caution in carrying infants not to hold them always upon the same arm. The neglect of this rule sometimes results in deformity. Children should not be urged to walk too early, or before the limbs are sufficiently strong to support the body well. Bandy-legs, knock-knees, and other deformities are the result of inducing children to learn to walk too early. As a general rule, the child should not be urged to walk until it shows a manifest disposition to do so.

Teething.—During this troublesome period children require special care, as the digestive organs are more liable to become disordered than at any other time. The child is often fretful and restless; and if it escapes being treated for worms half a dozen times, although innocent of harboring any such vermin, it is unusually fortunate. Teething is generally held responsible for every disease which occurs during the period of the eruption of the teeth. It is probable, however, that the process of teething is really responsible but for a small part of what is charged to it. Lancing the gums is seldom called for. The tissue covering the teeth is not sufficiently tense to require cutting to allow them to protrude. In fact they do not tear their way out, but the tissue covering is gradually absorbed. About the only occasion for lancing the gums is the occurrence of infantile convulsions. Rubbing the teeth with very hard substances is also a questionable measure. All the rubbing required will generally be performed by the child itself with the finger or thumb.

DISEASES OF CHILDREN.

A large share of the diseases to which infants and young children are subject, arise from the ignorance of mothers and nurses respecting the hygiene of infancy, or how to feed, clothe, and care for human beings during the first years of their existence. If adults suffer for want of attention to the laws of health, infants suffer still more, not generally, however, so much through intent to neglect, as through ignorance of the requirements of the human system during the first years of life. Undoubtedly, a large share of the most serious constitutional diseases from which adults suffer have their foundation laid in infancy by various injurious practices, to which attention is more particularly called elsewhere in this volume.

The treatment of the diseases of infants has, until recently, been in a very unsatisfactory condition. Fortunately for these little ones, recent investigations, which have been conducted independently in all the principal civilized countries of the globe, have resulted in the development of many new features and principles, by the aid of which they may now receive as fair a chance for recovery from illness as their older relatives.

The treatment of the diseases of infancy is attended by difficulties much more serious in many respects than those met with in the treatment of adults. One of the first of these is the difficulty of obtaining a full account of the patient's symptoms. The little one is not able to tell how it feels, and the information must be almost wholly gathered from observation. Only the quick eye of the well-informed and anxious mother and nurse, or the intelligent physician, is able to detect the evidences of disease manifested in early life. Many of the most serious conditions are indicated by slight symptoms which might escape detection if not well understood.

The following facts respecting the deviations from the condition of health as seen in children, will be of great value in enabling the mother or nurse to detect the early evidences of disease, and so apply the necessary and appropriate treatment.

General Appearance.—A peculiar or unnatural attitude, flush or pallor of the face, white or livid color of the lips, unusual dryness of

the skin or excessive or irregular perspiration,—as of the head and forehead only,—a disturbed or painful expression, moaning, starting, muscular twitching, grinding of the teeth, strong working of the nostrils, staring, etc., are all symptoms which should arouse suspicion of disease.

Pulse.—In children under two years of age, the pulse ranges from ninety to one hundred and thirty beats per minute. After two years, it is rarely more than a hundred, though it may be as low as seventy. Any great deviation from these limits indicates disease. A pulse as low as forty or fifty in a young child is a grave symptom; for instance, if a child seems feverish and sick, and has a pulse of one hundred and twenty, it is very likely due to some indiscretion in diet. If the same symptoms are present with a pulse of forty or fifty, it is very probable that the child is suffering tubercular meningitis, a very fatal malady.

Respiration.—The number of respirations in a child vary from thirty to fifty per minute. About forty is the usual average under two years. The respiration in children over two years of age should be about eighteen during sleep, and from twenty to twenty-five while awake. In children under one year of age, respiration is generally forty to fifty a minute.

Expression of Countenance.—The upper portion of the face is affected chiefly in brain disease, which is indicated by a knitting of the brow, contracted forehead, and rolling, fixed, or staring eyes. In heart and lung affections, the middle portions of the face are affected, the symptoms being sharp, distended and working nostrils, a bluish circle around the mouth and dark rings under the eyes. The lower portion of the face exhibits symptoms relating to the bowels. The cheeks are changed in color, being either pale or flushed. They may be sunken or puckered, the mouth being drawn to one side. The lips are livid or pale, often giving the expression which the famous Sir W. Jenner describes as "a Voltaire-like look." Unnatural contraction or dilatation of the pupils is significant of nervous disorders.

Gestures.—The motions of a child are often very significant. In brain disease the child puts its hand to its head, pulls at its ear, rolls its head on the pillow, and beats the air.

In abdominal diseases, the legs are drawn up, the countenance is anxious, cheeks sunken, and the child picks at the bedclothes. When

distressed for breath from diseases of the respiratory organs, the child tears its throat, or puts its hand in its mouth.

The Cry.—In pneumonia, or capillary bronchitis, the child's cry is labored and half suffocated, sounding as though coming from an adjacent room. In croup, it is hoarse, with crowing respiration. In disease of the brain, especially water on the prain, or hydrocephalus, it is sharp, shrill, and solitary, while in marasmus, or wasting disease of the bowels, it is moaning and wailing. Long continued crying, from which the child cannot be diverted, is due to either earache or hunger. A peevish cry, attended by a slight, dry cough, is indicative of inflammation of the lungs. A very loud, shrill cry produced by coughing or suddenly moving the child, is usually due to pleurisy.

A cry accompanied by writhing and wriggling when the bowels move, is due to intestinal disease. Moaning is particularly characteristic of disease of the stomach and bowels.

As a general rule, children shed no tears before they are three or four months old. Some authors consider that in children under seven years of age the shedding of tears is a favorable symptom, while the absence of tears is very unfavorable.

Posture.—When the child cannot breathe lying down, and shows a great desire to sit up, or to be held in an upright position, disease of the respiratory organs is indicated. If the child lies on the side, with the legs strongly drawn up, with the arms close to or on the chest, some serious brain affection is indicated.

The Eye.—Squinting occurring suddenly in acute disease, is a serious symptom, indicating irritation of the nervous system. It may occur in connection with convulsions, and is likely to remain after the child has recovered from the fit. When a child suffering from tubercular meningitis becomes cross-eyed, it will probably die. A very small pupil indicates congestion of the brain. Large pupils which do not respond to light, indicate some disease of the nervous system. Inequality of pupils, that is, one contracted and the other dilated, when occurring in connection with acute disease, is a very serious symptom. Inequality of pupils is sometimes produced by the irritation of worms in the intestines.

The Tongue.—A furred tongue covered with small particles of whitish curd, indicates dyspepsia and intestinal irritation. A white fur usually indicates fever, and yellow fur, chronic derangement of

the stomach and liver. Brown fur is present in typhoid fever, or the typhoid condition. A red and dry tongue indicates inflammation of the mouth, stomach, and bowels. A strawberry tongue, when accompanied by fever and an eruption, indicates scarlatina. A glassy tongue is an indication of dyspepsia. The tongue of a young infant can be seen when it is crying, or, if it can not, it can be made to protrude the tongue by placing the finger on the lip.

Development.—The child should grow from six to seven inches the first year. From the fourth to the sixteenth year, about two inches should be annually added to the height. From the sixteenth to the seventeenth year, the average growth is one and a half inches. In the next three years, the usual addition to the height is about one inch each year. Retarded growth is indicative of disease of the bones, rickets, or scrofula. Most of the diseases of youth and childhood accelerate the growth, which gives rise to the idea that too rapid growing produces disease, which is exactly the opposite of the truth; the disease being the cause of too rapid growth.

The child should be able to run alone at the end of twelve months. When it begins to walk, attention should be given to the manner in which it uses its limbs. If it walks simply on the toe of one foot with a limping gait, and complains of pain in the knee whenever the limb is handled, it may be suspected that hip disease is beginning. The child does not usually raise its head till it is six or eight weeks old, and cannot sit upright until four or five months of age.

Careful attention should be given to the teeth. The first incisors, or front teeth, should appear by the seventh month; the first back teeth by the twelfth month; the eye teeth and stomach teeth at the end of a year and a half, and the second back teeth, or molars, at twenty months.

Attention should also be given to the gums, to ascertain whether they are hot, swollen or tense, indicating the approaching eruption of the teeth.

The Bowels.—The bowel passages of the infant should be yellow in color, and at least three or four a day. The appearance of curds in the bowels indicates imperfect digestion, and if the difficulty is not corrected, will result in intestinal catarrh or inflammation.

General Symptoms.—The whole surface of the body should be carefully examined. In health, the skin should be mottled, flesh firm,

skin smooth and elastic, and not flabby. Any eruptions should be noticed; the anus, especially, should be carefully examined for soreness or eruptions. The arms and limbs should move freely. It should be remembered that chills seldom occur in young children; convulsions and delirium correspond to chills and headache in adults. Sleeplessness or disturbed sleep is a symptom which indicates some quite serious disturbance, as infants naturally sleep very soundly, and when healthy, spend eighteen to twenty hours out of the twenty four in sleep. A restless, sleepless child will be badly nourished, and dwarfed in development.

The *fontanel* is the proper name for the so-called soft spot which is found upon the head of all young children. There are, in fact, two, one in the fore part of the head, and the other in the back part. The larger one, which is here referred to, is situated at the upper part of the forehead. It is familiar to all mothers. By observing the condition of this spot, much can be learned of the condition of the brain. As the bones have not yet joined over the small space, the soft tissues filling it rise and fall with the increase or decrease of blood in the brain. When the fontanel is very full, the brain is full of blood, and congested. When it is unnaturally depressed, it is in consequence of too little blood in the brain. The first condition exists in congestion of the brain, inflammation, or water on the brain. The second is found when the child is suffering from the effects of wasting disease. The fontanel constitutes an excellent means of distinguishing between true and false dropsy of the brain, being depressed in the latter disease, in consequence of the deficient blood supply to the brain, instead of being full and prominent as in true dropsy of the brain.

The temperature of the body is a very important symptom as a means of determining the amount of fever present. It can only be ascertained by means of a thermometer, with which every family ought to be supplied. The natural temperature is 98½°. In children, the temperature may fall slightly in the evening just before going to sleep, but a rise of temperature to 100° or upward indicates fever. The sudden rise of temperature to 104° or 105° indicates the onset of some severe fever, like scarlet fever, or pneumonia.

CONVULSIONS.

SYMPTOMS.—Spasmodic twitching of the muscles; unconsciousness; other symptoms too familiar to require description.

This is a very common disease in infancy. It is very likely to occur during teething, either when cutting the first or the second teeth. As a general rule, it is due to indigestion, especially to accumulation of gas in the bowels. It may often be caused by taking cold. When it occurs periodically, several days in succession, being followed by fever, it is due to ague, during which the convulsion takes the place of the chill. The convulsion in infants represents the chill in older people. Convulsions are very frequent in measles, scarlet fever, whooping-cough, and other diseases of childhood. When one convulsion follows another in rapid succession, some serious nervous disease is indicated, as dropsy of the brain. Convulsions occurring during the course of disease are more serious than if they occur at the beginning. They are most likely to occur in children having what is termed a nervous temperament. They are also frequent in rickety children. They are likely to occur in prostrating diseases, and are sometimes produced by an inactive state of the liver.

In what is termed "inward fits," the child lies as if asleep, only moving the eyelids, the muscles of the face twitching, and the countenance wearing what is termed "a sardonic smile." Inward fits are generally produced by flatulence, or gas in the bowels. When the hands and feet twitch, and the child lies with its eyes half closed, waking with a sudden start and the face flushed, it is threatened with general convulsions. A convulsion may last for a minute or two, or for one or two hours, at the end of which the child often falls asleep, lies in a stupor, or cries loudly, or slowly returns to consciousness. Sometimes the stupor becomes more intense, and death occurs. This is very rare, except in the convulsions which occur in whooping-cough and meningitis.

Treatment.—Plunge the child as quickly as possible into a hot bath, pouring cool water upon the head and chest. When the convulsion is the result of indigestion, the child should be made to vomit, if possible, by drinking cold water or half a glass of cold water into which a teaspoonful of mustard or powdered alum has been stirred. When constipation and flatulence are the cause, give an enema of soap-suds. When the fontanel is prominent or bulging, the cold applications to the head should be very vigorous; ice may be used. When there is considerable fever, cool sponging of the person should be employed, together with cold injections into the bowels. When the fontanel is depressed, showing lack of blood in the brain, the convulsions may

sometimes be relieved by inverting the child, that is, turning its head downward. This is often recommended indiscriminately for convulsions, which is a grave error, as it might produce a fatal result in convulsions produced by congestion. "Inward fits" are relieved by fomentations to the bowels, or giving the child a few teaspoonfuls of water containing a drop or two of peppermint essence.

INFANTILE TRISMUS—"NINE-DAY FITS."

The symptoms of this affection are similar to those of tetanus in adults. The mother notices that the child cries when it is placed to the breast, and is unable to nurse. The jaws are found to be fixed partly open. The infant is seized at intervals with violent convulsions, foaming at the mouth, thumbs drawn into the palm of the hand, jaws locked, face livid. The disease is generally fatal in from one to three days; death sometimes occurs within a few hours.

Causes.—A careful investigation of the cases of this disease in all parts of the civilized world have shown that the principal causes are impure air, filthiness, improper diet, the use of alcoholic liquors by the mother, and improper dressing of the cord Just one hundred years ago, according to Ellis, from whose excellent work we have drawn largely in our account of the symptoms of disease in infants, one-sixth of all the children born in the Dublin lying-in hospital died within two weeks of birth, nineteen out of twenty dying of this disease. When the ventilation and hygienic management of lyingin cases were improved, only thirty-seven cases occurred out of nearly seventeen thousand births. Probably the direct cause of the disease is an irritation of the navel.

Treatment.—Continuous application of ice to the spine is undoubtedly the best remedy in this disease, but with the very best treatment many cases will be fatal.

TETANIE.

SYMPTOMS.—Thumbs drawn into the palms with fingers flexed over them; hands bent at wrist; toes contracted; feet extended; arms and legs rigid; muscles of the jaws and back not affected; often spasm of the glottis, causing croupy symptoms; attacks intermittent, attended by severe pain; spine not affected

This disease in some respects resembles tetanus, but it is by no
grave an affection. It is unattended by fever, and the con-
e not continuous, which distinguishes it from inflammation

of the brain. The principal cause of this disease is irritability of the nerve centers, induced by a nervous organization, and the irritation of indigestion. It is most apt to occur in the first three years of life.

Treatment.—The disease is rarely fatal, is almost always relieved by a long-continued warm bath. A hot blanket pack may be used instead of a warm bath, with advantage.

NIGHT TERRORS—NIGHTMARE.

SYMPTOMS.—Child wakes suddenly, screams, does not recognize its mother; sees very small animals, and is much agitated; sometimes has pleasing hallucinations; an abundance of pale colored urine is generally passed during the attack.

This is a somewhat alarming, but by no means a serious, affection, although it may be a precursor of grave disease. It does not indicate the presence of disease of the brain. It is almost always due to disorder of digestion, resulting from late suppers, overeating, eating sweetmeats, candies, etc., the use of too much meat and of tea and coffee.

Much of the nervousness of children is due to the use of meat. In the majority of cases, children would be much better off if they had none at all before ten or twelve years of age, and we have seen very vigorous and healthy children of twelve and fourteen who have never tasted a particle. Nightmare is a mild form of this affection.

Treatment.—All the exciting causes just mentioned should be avoided. The child should have regular meals, not oftener than three times a day after two or three years of age; and should never take food within two or three hours of retiring. Food should be simple and unstimulating. All measures should also be adopted for improvement of the general health, as daily exercise in the open air, exposure to the sun, etc. Children who are old enough should be encouraged to take sufficient exercise to become somewhat fatigued, as sound, refreshing sleep will be secured by so doing. For immediate relief, give a hot bath, with cold to the head, an enema of soap-suds or warm water, an emetic when the stomach is loaded with undigested food, and fomentations to the bowels when distended by gas. A teaspoonful of powdered alum or mustard in half a glass of water will produce prompt emetic effects, if the child can be made to take it. If the child is suffering with night terrors, he should not be allowed to sleep alone, and should be allowed to have a light at night if he desires. He should never be scolded or punished, but should receive sympathy and encouragement.

Nightmare occurs very often in grown people as well as in children. The causes and general indications for treatment are essentially the same as stated above.

ACUTE HYDROCEPHALUS—TUBERCULAR MENINGITIS.

SYMPTOMS.—FIRST STAGE: *Irritability of disposition; headache, shown by the child often putting hand to head; drowsiness; after the child is old enough to walk, dragging of one leg; little or no appetite; vomiting; constipation; fever; disturbed sleep; bowel discharges pale and offensive; tongue moist, red at tip and edges, furred in center; pulse quick and irregular; eyes sensitive to light; child sleeps with eyes partly open, grinds its teeth, often wakes in alarm; slight cough; pinched, haggard expression; sighing; yawning.*

SECOND STAGE: *Increased irritability; child wants to be let alone; delirium at night; pulse unnaturally slow; stupor; countenance frowning; head hot and fontanel pulsating; increased stupor; convulsions, which may leave paralysis; pupils large and motionless; eyes staring and sunken; pulse small and rapid; clammy sweats; labored breathing; purging; just before death, cessation of pain, purging, and difficult breathing, with apparent improvement.*

This is a very insidious and deceptive disease. It begins very stealthily, and the second or third stage is frequently reached before the real nature of the affection is discovered. It is a very fatal malady. It generally occurs under five years of age. A symptom of some importance not mentioned above is the appearance of a reddish line remaining when the finger is drawn over the skin. This symptom is not a positive one, but should excite strong suspicion of the disease. In some cases, the patient dies very suddenly from a rapid accumulation of water in the brain, known as water-stroke. For these cases, there is no help. The symptoms differ more or less in all cases, ordinary cases continuing for from ten to twenty days.

Causes.—The principal causes are depression of the vital powers, improper diet, especially encouraging precocity. Children early inclined to remarkable manifestations of intelligence and mental power, are more subject to this disease than others. There is a strong suspicion that the use of meat by children is a cause of this disease, it being a well known fact that the tubercles which are found in the membranes of the brain after death are highly nitrogenous in character.

Treatment.—The treatment should be, first, preventive, by avoidance of all known causes of disease in children whose temperament makes them subject to it. The disease is curable only in its first stage. The essential measure of treatment is the application of cold to the

head and warmth to the extremities. Compresses wrung out of ice-cold water, frozen compresses, ice bags, and bags filled with iced water, are the best means of applying cold in these cases. The hair should be cut short so that the brain may be more thoroughly cooled. The patient should be kept in a dark and quiet room. The diet should be very plain, and no stimulants should be given. When one case of this kind has occurred in a family, especial pains should be taken to ward off the disease in the other children by proper precautionary measures.

CHRONIC HYDROCEPHALUS—WATER ON THE BRAIN.

SYMPTOMS.—Great enlargement of the cranium, face and lower part of the head remaining of natural size; cry harsh; rolling of eyes; squinting; legs doubled on the body and feet crossed, feet and hands cold.

This affection may exist before birth to a greater or less degree, or it may come on afterward, often appearing ten or twelve months after birth. The head continues to enlarge until in some cases it becomes

Fig. 352.

Fig. 353

Fig. 354.

Side, Vertex, and Front View of Head of Hydrocephalus Child.

enormous in size, giving the child a very unnatural appearance. Figs. 352 to 354. The child suffers with frequent convulsions and increasing paralysis. Death generally occurs within a year or two, but the patient may linger for many years.

Causes.—The causes of chronic hydrocephalus operate chiefly through the mother. They are those agents which affect the nutrition of the mother.

Treatment.—Patients occasionally recover from this disease, but in the majority of cases no treatment is successful. Tapping the head has succeeded better than any other method of treatment, but it is, nevertheless, rarely successful. Bandaging the head by means of elastic bandages or straps of adhesive plaster has been practiced, but without any very encouraging results.

FALSE DROPSY OF THE BRAIN.

SYMPTOMS.—Child restless, peevish, feverish; sighing, moaning, screaming during sleep; a sharp cry upon being touched; bowels loose, discharges green and offensive; husky cough; eyes wandering; stupor; pulse and respiration feeble.

The principal cause and characteristic of this disease is debility from want of proper food or any other debilitating cause. There is no inflammation, although the symptoms closely resemble those of tubercular meningitis. A very common cause of the disease is leeching and blistering the head for inflammation of the brain, by which the opposite condition is produced. It frequently occurs in exhausting diseases, as cholera infantum, typhoid fever, long-continued indigestion, etc.

Treatment.—The opposite treatment is required in this disease from that necessary in inflammation of the brain. Cold, and other depressing agents, should be carefully avoided.

It is very important that the mistake should not be made of treating this disease for inflammation of the brain, as very opposite remedies are required. The best means of distinguishing between this disease and acute dropsy of the brain is the depression of the fontanel present in false dropsy, while the fontanel is bulging in the graver affection. Warmth should be applied to the body, and occasionally to the head. Hot baths to the extremities, however, are not indicated, as they would diminish the amount of blood in the brain, which is already too little. Rubbing the back of the neck with a sponge dipped in ice water, or a piece of ice inclosed in thin muslin, may be employed three or four times a day with advantage. The patient should be kept in a horizontal position, preferably with the head lower than the feet. One of the most important measures of treatment is proper diet. The child should be fed with beef tea, well boiled oatmeal gruel, egg beaten with milk, chicken broth, etc. In case the digestion is very feeble, and the debility great, the white of an egg dissolved in a glass of water may be used to advantage. In some cases, some improvement seems to take

place from the addition of a few drops of brandy to the egg and water. Food should be given in small quantities and at short intervals. As the strength is increased, the quantity of food and length of the intervals should be increased. In many cases, nutritive enemas may be employed with advantage. The offensive character of the discharges can generally be made to disappear by the addition of a little lime-water to the food. A teaspoonful of lime-water with a couple of teaspoonsful of milk may be given with advantage each time the child eats.

PARALYSIS OF THE SOFT PALATE.

SYMPTOMS.—Nasal tone of voice; liquids enter the nose on attempting to swallow.

This affection occurs most frequently after severe cases of diphtheria, coming on generally as the patient is recovering from the disease. Other muscles in various parts of the body are also likely to be affected at the same time.

Treatment.—When this difficulty is the result of diphtheria, recovery usually takes place within a few weeks without treatment of any sort. Recovery is greatly facilitated, however, by the local application of faradic electricity. Applications may be made externally with sponges, and internally by means of electrodes adapted to the purpose. Gargling hot and cold water alternately is also of some advantage.

INFANTILE PARALYSIS.

SYMPTOMS.—Sudden paralysis of the muscles of one or more limbs, or of a single group of muscles; subsequent wasting of the affected muscles.

This disease is a form of inflammation of a certain portion of the spinal cord; and it often occurs during teething, frequently also during an attack of measles, scarlatina, or other acute disease. Sometime only a single muscles is affected. The muscles of the leg are more likely to suffer than any other part of the body. After the paralysis occurs, rapid wasting of the muscle takes place. The limb does not entirely cease to grow, but its growth is greatly retarded. After a time, the affected muscles undergo fatty degeneration.

Treatment.—When fatty degeneration has occurred, little or no improvement can be obtained. The satisfactory treatment of infantile paralysis depends upon early attention to the disease. During the first few weeks after paralysis first occurs, ice should be applied to the

spine several hours each day, for the purpose of limiting the inflammation as much as possible. The patient should also be kept quiet.

After the inflammation is subdued, electricity should be applied to the affected muscles, together with massage. In severe cases, the faradic current will not cause contraction of the muscles and galvanism must be used first. Very strong currents are sometimes necessary. The current should be frequently interrupted by withdrawing and replacing one of the electrodes, as contraction occurs only at the beginning and breaking off of the current. In curable cases, contraction may be produced by the faradic current, after galvanism has been employed for some time, and it should be used when this stage is reached. Cases in which contraction cannot be produced by either form of electricity are hopeless. Besides the use of electricity, the affected muscles should be vigorously rubbed and kneaded daily, and should be exercised, by the Swedish movements, while the patient is requested to make efforts to use them. Alternate hot and cold sponging, applied daily, is also a valuable measure of treatment. For incurable cases, apparatus of various sorts have been devised, by means of which elastic bands in some degree supply the place of the affected muscles.

SPINA-BIFIDA—CLEFT SPINE.

This is a singular congenital defect in development, in which the spinal canal is not completely closed. It generally occurs in the lower part of the spine. In consequence of the defect referred to, the soft part becomes stretched. A cystic tumor is formed, the cavity of which connects with the spinal canal, and is filled with the fluid which always exists in small quantity in the spinal cord and brain. Pressure upon the tumor will generally cause convulsions, by the pressure upon the brain. As the sac enlarges, it gradually becomes thinner, and in many cases ruptures. Generally, however, the patient dies of inflammation of the brain.

The causes of this affection are not well understood, but are undoubtedly ante-natal influences of some sort. This condition is an almost hopeless one; but a few cases of recovery have been reported.

Treatment.—The most successful treatment has been the employment of continuous pressure, made by means of bands or adhesive straps, and withdrawal of the fluid by means of aspiration. In a few cases, a cure has taken place after the injection of iodine and other substances into the sac.

CONSUMPTIVE CONSTITUTION.

It is important to be able to detect the pecularities which characterize a child with marked consumptive tendencies, so as to take such measures as may, possibly, ward off the disease. Sir William Jenner describes the appearance of a child with consumptive tendencies, as follows: "Thin skin, clear complexion, the surface veins distinct, eyes bright, pupils large, eyelashes long, hair silken, face oval, ends of the bones small, shafts thin, limbs straight." Dr. J. considers freckles a symptom of value. Children. subject to tuberculosis are precocious. They cut their teeth early, and learn to run alone and talk before others. The chest is generally long and round. In some cases it is long and pigeon-breasted, a condition resulting from repeated attacks of catarrh, and bronchitis.

Treatment.—The most important means of combating and overcoming the consumptive tendency in a child, are proper diet and exercise. A child of consumptive parents should be submitted to the most careful regimen from the earliest infancy. If the mother is consumptive, the child should be weaned, and a healthy wet-nurse employed. Great care should be taken to follow carefully all the directions given elsewhere for the care of infants in health. These children should not be given candy and sweetmeats of any kind, and should not be allowed to take tea or coffee. At the proper time, graham and oatmeal preparations should be introduced into their dietary. But little meat should be employed. As a general rule, the less meat used by these patients the better, since tubercle is a nitrogenous product, closely resembling meat in its composition, and is very likely to be produced by an excess of nitrogenous elements in the food.

RICKETS—RACHITIS.

***SYMPTOMS.**—At first, profuse perspiration, especially of the head; feverishness at night, with disposition to kick off the clothes; tenderness of the whole surface of the body; child dreads to be touched; excessive quantity of urine, with copious deposits; child has an old, careworn look; eyes unnaturally brilliant; soon head enlarges; long bones become curved and the joints enlarged, as seen in wrists and ankles; curvature of the spine; teeth slow in coming; abdomen large and tumid; head flattened on top; bad smelling bowel discharges; capricious appetite.*

In addition to the above long list of symptoms the child may suffer with a variety of others arising from bronchitis, acute or chronic pleurisy, enlargement of the spine and liver, hydrocephalus, convulsions,

diarrhea, and spasmodic croup. When no teeth appear before the ninth month, the child should be carefully examined, as there are grave grounds for suspicion of rickets. When improvement does not occur, all the symptoms given above increase until death takes place from exhaustion. When improvement does occur, under proper treatment or changed conditions, the enlarged joints become smaller, but the curvatures of the spine and limbs are not corrected. The muscles generally undergo changes which render them weak and feeble, so that the children are often unable to use them, although they may still retain considerable size. This difficulty can be but partly overcome in advanced cases.

Causes.—The chief causes of rickets are improper food, bad air, and a general lack of proper care. The use of food which does not contain a sufficient supply of phosphates and other organic elements, on the part of the mother, is one of the predisposing causes. This may affect the child not only before birth, but after birth, through nursing. The affection is to be attributed to the use of superfine flour bread, more than to any other one cause. In order to prevent its occurrence, expectant mothers should make free use of oatmeal, graham, and other whole-grain preparations. The same principle applies to the diet of children after they have been weaned. Little, if any benefit can be expected from the use of phosphates as they are generally administered in medicine. Ground malt, maltine, and Trommer's Extract of Malt, are useful nutritive medicines, as they present the phosphates in a natural condition. Every possible measure should be employed to improve the general health of the patient, by means of daily sponge baths and friction to the whole surface of the body, out-door exercise, sun baths, etc. Particular attention should be given to keeping the stomach and bowels in good condition. Electricity is a valuable tonic agent, and may be used in all cases with good advantage.

CEPHALHÆMATOMA—BLOOD TUMOR OF THE SCALP.

Cephalhæmatoma is a swelling on the head, generally caused by the rupture of a blood-vessel beneath the scalp from pressure during labor. As a general rule, absorption takes place without any particular attention. There is generally left, after absorption, a bony ridge, marking the edges of the tumor, which will also disappear after a time.

PAIN IN THE BOWELS.

Pain in the bowels in young infants is indicated by moaning cries, pallor, peculiar drawing of the corners of the mouth, twitching of the face during sleep, sometimes supposed to be due to "angel whispers;" the abdomen is usually bloated; infant kicks and frequently passes wind. The principal cause is indigestion. If the feet are allowed to get cold, pain in the bowels will generally result. It is also occasioned by the irritation of worms. Infants often manifest great eagerness to nurse.

Treatment.—Regulate the diet carefully, apply fomentations to the bowels, and warmth to the feet. A drop or two of peppermint essence in a few teaspoonfuls of water, will generally relieve the pain from gas in the bowels.

VOMITING.

Vomiting in infants is usually the result of overeating, or of eating too fast. It is frequently occasioned by sickness which results from rocking in the cradle or tossing in the arms, both bad practices. Acidity of the stomach also frequently occasions vomiting. In these cases, the curds thrown up are sometimes very large, especially when cows' milk is used without dilution.

Severe coughing generally induces vomiting in children. Sudden vomiting, in which the food is expelled from the stomach with a good deal of force, is characteristic of hydrocephalus, or dropsy of the brain. Vomiting from overeating is really nothing more than regurgitation of food from the over-full stomach, which takes place very easily on account of the shape and position of the stomach in infants, which differ from that in adults. Nurses generally consider easy vomiting a good symptom, and the opinion has good foundation in fact, since in children who do not vomit easily, overeating results in fermentation of the food, which is likely to be followed by catarrh of the stomach and bowels.

Treatment.—Vomiting will usually be checked by regulating the quantity and quality of food. If it comes from sour stomach, a little lime-water should be used after each meal, one or two teaspoonfuls being taken in double the quantity of milk. When the child seems to suffer considerable distress, hot fomentations or a hot flannel should be applied over the stomach.

INFANTILE DYSPEPSIA.

SYMPTOMS.—Vomiting; constipation; diarrhea; green or clay-colored stools, bowel discharges sour or fetid; appearance of curds in the bowel discharges; loss of flesh, irritability; moaning cry; capricious appetite; feverishness; symptoms of worms.

Disorders of digestion constitute a very large share of the causes of illness in children. A careful study of the causes of death among children shows that derangement of digestion of various kinds, either directly or indirectly, are the cause of by far the greater share of deaths occurring in the first years of life. Vomiting is the most common symptom of indigestion. When the matters vomited are very sour, the child is suffering with acidity of the stomach, which may be the result of overeating or of the use of sugar or starchy food. Green, offensive bowel discharges indicate decomposition of the contents of the intestines in consequence of imperfect digestion. The green discharges are generally preceded by discharges in which lumps of curd are seen, indicting that digestion is imperfectly performed. After awhile, an irritation of the intestinal canal arises from the contact of hard, undigested curds which should have been digested in the stomach, and the discharges become more offensive in character, and are likely to contain considerable mucus from catarrh of the bowels. Clay-colored stools indicate an inactive condition of the liver, or an obstruction of the bile ducts, probably in consequence of the extension of the intestinal catarrh into the bile ducts. When the stools continue greenish, sour or fetid, sometimes the child shows marked symptoms of wasting, becoming thin and wrinkled,—the countenance wearing an old look,—weak, peevish and restless. In many cases, convulsions come on in consequence of the weakened state of the child, in one of which the child dies. In other cases, the child dies from exhaustion. When vomiting is the principal symptom, the difficulty seems to increase until the little sufferer is unable to retain anything upon the stomach.

Causes.—The principal causes of derangement of the digestion in children are improper food, too frequent feeding, overfeeding, the use of nursing-bottles which have not been properly cleansed. For directions with reference to feeding, see section on "Feeding and Care of Infants." Mental excitement, as care, anxiety, and particularly anger on the part of the mother, is a frequent cause of indigestion in nursing infants. Menstruation, pregnancy, sexual excesses, also exert a pernicious influence upon the infant through the milk. The ill health of the mother

is a frequent cause of laying the foundation, during the nursing period, of constitutional weakness in the child, as well as occasioning immediate disorders of nutrition. The practice that many mothers indulge in, of feeding the child every time it cries, is a most pernicious one, but we will not dwell upon this point, as it has been fully considered elsewhere. Nursing-bottles, especially those with long tubes, are responsible annually for a large number of deaths among children. It is so difficult to keep bottles perfectly clean, as milk rapidly undergoes decomposition when warm, that probably the nursing-bottle is not free from danger in one case out of twenty in which it is used. A slight degree of sourness in a bottle or tube will communicate fermentation to the fresh milk taken by the child, so that the food will very soon sour and decompose in the stomach, producing all the results of indigestion or dyspepsia. The use of milk from unhealthy cows, from farrow cows, or that which has been allowed to slightly "change" before using, is very sure to disturb the sensitive digestive organs of the infant.

Treatment.—The child should be fed at regular intervals, the length of which should be determined by its age. It should be fed a proper quantity, and at proper times. The habit of feeding children as frequently during the night as during the day, is a mistaken and injurious one. (See section on "Feeding and Care of Infants.")

When the child shows symptoms of indigestion, careful inquiry should be made respecting the nature of its food, the manner of feeding, etc. If the cause is ascertained to be in the mother, either a healthy wet nurse, whose child is about the same age as that of the patient, should be employed, or, when this cannot be done, as is often the case, cows' milk should be used. The milk should be taken as fresh as possible. It ought not to be more than six or eight hours old, when fresher can be obtained. Attention should also be given to the length of time since the cow has calved. The milk of cows, being richer in caseine and in fat than human milk, should be diluted with pure water, or, as we prefer, with barley water, or thin oatmeal gruel, well boiled, and strained through a coarse cloth. For a very young child, milk should be diluted one-half. As a child grows older, and its digestive powers increase in strength, the quantity of water may be diminished.

In cases in which there is much acidity, and the discharges from the bowels are very fetid in character, lime-water may often be used

with advantage, one part lime-water being added to three or four parts of milk. In some cases it is sufficient to give the infant one or two teaspoonsful of lime-water in double the quantity of milk after other food has been taken. In severe cases in which the digestive organs of the child seem to be unable to digest milk in any form, strong beef tea, white of egg dissolved in water, barley-water, or thin oatmeal gruel may be employed, either separately or combined. We have succeeded in cases which seemed utterly hopeless, in restoring children by beginning with egg water, made by dissolving the white of an egg in a glass of tepid water, and gradually adding a little milk, oatmeal gruel, beef tea, or other food, as the child became able to bear it. In many cases, it is necessary to give food in very small quantities, sometimes not more than a tablespoonful or two at a time, and at intervals of an hour or two. When there is evidence that the nursing-bottle is at fault, and the evidence may be considered good whenever the nursing-bottle is employed, the bottle should be discarded at once, and the child should be fed with a spoon. Nursing-bottles with long tubes should be avoided as in the highest degree dangerous. We have never yet found one which was not in a condition unfit for use. In extreme cases, in which the stomach rejects food altogether, it should be allowed to rest for a time, the child being nourished in the meantime by means of nutritive enemata of beef tea, egg and milk, and other preparations suitable for such use.

Diarrhea, dysentery, colic, and other diseases of the digestive organs in children, should be treated upon the same principles, and essentially in the same manner, as recommended for these diseases in older persons.

WORMS.

Many children are rendered dyspeptic, and not infrequently made very ill, by constant treatment for worms. In the great majority of cases the symptoms which are supposed to be those of worms are really nothing more than symptoms which will only be aggravated by the use of the various worm medicines generally employed in such cases. When there is any suspicion that the child is troubled with worms, the bowel discharges should be carefully examined daily, for several days in succession. If no worms or segments of worms are found in the stools, it may safely be concluded that the symptoms observed arise from some other cause. At any rate, a physician should be consulted before any active measures of treatment are adopted.

We are sorry to say that many physicians are in the habit of adopting the suggestions of mothers and nurses, and consenting to treat infant patients for worms without sufficient grounds for so doing. Much harm is often done in this way.

SKIN ERUPTIONS.

Slight eruptions of the skin are very common in children. A form of eruption known as strophulus which appears in two forms, red and white gum, is most peculiar to small children. This eruption affects chiefly the face and arms, other portions of the body being occasionally affected. The eruption consists in little elevations about the size of a pin-head, which, when red, are known as red-gum, and when white, are called white-gum. Nettle-rash, an eruption which resembles the result of a nettle sting, is also one of the most common skin eruptions in children. The principal cause of eruptions of this character is indigestion.

Treatment.—Remove the cause by improving the child's digestion Bathe the affected parts with a solution of bi-carbonate of soda, teaspoonful to a pint of water. This generally relieves the intense burning. In severe cases, the parts affected may be covered with cloths wrung out of the solution.

ACCIDENTS AND EMERGENCIES.

SUDDEN ILLNESS.

In many cases of sudden illness, it is often of vital importance to know just what should be done at once, as prompt measures will often prevent serious consequences which otherwise might follow.

Fainting.—Fainting, or syncope, is due to sudden failure of the heart's action. At the moment a person faints, the heart nearly or quite ceases to beat, so that a sufficient amount of blood is not sent to the brain, and the person falls unconscious. The action of the lungs is also checked. Fainting may be occasioned by loss of blood, by violent mental emotion,—as joy, fear, or grief,—a blow upon the pit of the stomach, a violent electric shock, or anything which arrests the action of the heart. Many persons will faint at the sight of disagreeable or unusual objects. The sight of blood or a serious wound causes some people to faint. When a person faints, the face is pale, pupils dilated, breathing suspended or gasping, pulse very feeble or not perceptible. Just before fainting occurs, the patient is dizzy and becomes weak and limp.

Treatment.—Although fainting is a condition which approaches very near actual death, it is not often fatal. When a person faints he should be immediately laid on his back with the head lower than the rest of the body if possible, so as to encourage the flow of blood to the brain. The dress should be loosened about the neck and chest, and cold water should be dashed upon the face with the hand. Slapping the chest, especially over the region of the heart, is also a useful measure. If necessary, a handkerchief upon which a few drops of spirits of hartshorn have been sprinkled, should be placed to the nostrils of the patient. He should be kept in a horizontal position until the breathing and pulse are fully restored and color returns to the cheeks. The upright position is an exceedingly dangerous one for the fainting person. When the attack is prolonged, or shows a disposition to recur, alternate hot and

Poison Ivy — Rhus Toxicodendron

Nightshade

PLATE XVII — *POISONOUS PLANTS*

cold applications should be made to the spine and the patient should be given hot drinks of some kind.

Convulsions.—If coming on soon after eating, give an emetic consisting of a teaspoonful of powdered alum or ground mustard dissolved in three or four tablespoonsful of warm water. If the extremities are cold, warm them. If the whole body is cold, give a hot bath. If the head is hot, apply ice. If there is violent jerking and clinching of the teeth, endangering the tongue, place between the teeth a cork or a piece of wood, or the handle of a spoon wound with cloth. If the patient does not recover quickly, send for a physician.

Apoplexy.—When a patient falls suddenly, becoming unconscious, with flushed face and full pulse, elevate the head and shoulders, and apply ice to the head. A physician should be sent for at once. For further treatment, see page 1078.

Sun-stroke.—For the treatment of sun-stroke, see page 1086.

Vertigo.—When a person is suddenly seized with vertigo or dizziness, he should lie down at once. If it occurs in a position in which there is danger from falling, as in looking over the edge of a precipice, looking down from a tower, and similar situations, the individual should at once withdraw to a sufficient distance from the point of danger to secure safety, and should lie or sit down and close the eyes until the symptom disappears. If a person feels dizzy in climbing, he should look up.

Sudden Mania.—Although violent mental derangement is generally preceded by symptoms of a premonitory character, it sometimes occurs very suddenly, making it necessary to take prompt measures. Mania may occur in consequence of disease of the brain or some temporary disorder of which delirium is a symptom,—as fever, delirium tremens, etc. As soon as signs of mental derangement occur, the patient should be put under careful watch. If the head is hot and the pulse full, relief will generally be obtained by the application of ice to the head. Most cases also require hot applications to the extremities at the same time. A physician should be called at once, and if there are evidences of real disease of the brain, the patient should be put under careful medical treatment, with proper supervision, or sent to an insane asylum.

Shock.—This term is applied to the condition which usually follows severe injury of any sort. It also frequently follows severe surgical operations. The patient generally becomes cold and complains of faintness. There is general tremor, pulse is small, speech and thought are

confused, there is little or no appetite, perhaps nausea and vomiting, and there may be involuntary discharges from the bladder and bowels. A shock is generally followed by reaction, in which the patient has more or less fever according to the intensity of the shock.

Hot bricks or bottles should be applied about the patient. If the injured part is painful, it should be soothed by hot applications. The hands and feet, and the whole surface of the body, should be rubbed until warm. Hot drinks of some kind should be given. Great harm may be done by the free use of stimulants, as is quite customary in these cases. By their employment the reaction, or fever, which follows may be greatly increased.

Hemorrhage.—The principal means to be employed for arresting hemorrhage are, pressure, ice or cold water, hot water, and the ligature. The means to be employed differ somewhat according to the part in which the hemorrhage occurs. As a general rule, the bleeding part should be elevated, and pressure applied at the point of injury. Hot or cold applications should also be made. Pressure acts by closing the bleeding vessels and allowing the blood to coagulate. Cold at first causes the blood-vessels to contract; but if applied continuously for a long time, the blood-vessels are paralyzed and become relaxed. Hot applications cause more permanent contraction of the vessels than cold.

The ligature is applied by a surgeon to the bleeding vessel itself; but when used by a person not skilled in surgery, should be applied either above or below the injury if it occurs in a limb, according as the bleeding comes from an artery or a vein. If an artery is wounded, the blood will flow in jets and will be of a bright red color. If the wounded vessel is a vein, the blood will be dark in color and will flow in a steady stream. If the vessel is an artery, the ligature or pressure should be applied between the wound and the heart; if a vein, it should be applied upon the opposite side. A slight hemorrhage from a wound may generally be very easily controlled by pressure upon the injured part with the fingers, or a compress of folded linen which may be held in place by the hand, or a bandage tightly applied. This method is particularly applicable to wounds of the scalp and upper portions of the face. A hemorrhage from superficial injuries may generally be controlled quite readily by applying freely dry plaster-of-Paris or a mixture of equal parts of flour and salt. These are excellent remedies for bleeding from the navel in young infants.

Bleeding from the Nose may generally be checked by holding the head erect, snuffing cold water up the nostrils, and holding one arm as high as possible. Other remedies are mentioned on page 988. Severe hemorrhage occurring from the trunk of the body must generally be controlled by pressure with the finger until the services of a surgeon can be secured.

Hemorrhage from a Cut Throat, may be slight or severe, according to the size of the vessel cut. When the large arteries are cut, death may occur in a few minutes. The head should be elevated, and cold applied until a surgeon can be called. When the hemorrhage is severe, pressure with the fingers may be required.

Hemorrhage from the Arm or Leg may be controlled by pressure upon the principal artery of the limb, made as follows:—Tie a knot in the center of a handkerchief or strip of cloth, of sufficient length to reach around the limb, including in the knot a small stone, a large marble, or in the absence of anything better, a small potato or other hard substance. Tie the bandage around the limb in such a way that the knot will come just over the course of the wounded vessel as shown in figure 355. It should be noticed that most of the large arteries run along the inside of the limbs. After tying the bandage, pass underneath it, on the side opposite the knot, a stout roller or rod. By means of this, the bandage should be twisted so as to tighten it, thus compressing the artery. Compression should be gradually increased until the hemorrhage is controlled. A bandage of this kind should not be retained in place too long, as the parts beneath it and below may be injured. Properly, its object is to control the hemorrhage until the bleeding vessel can be secured and tied by a surgeon or other competent person.

Fig. 355. Compression of Artery of the Arm.

An injury occurring in the upper part of the arm may be controlled by pressure above the collar bone of the same side, made by means of the thumb, or better, the ring of a key. See Fig. 356.

Fig. 356. Compressing the Artery of the Arm.

Hemorrhage from the Palm of the Hand, is sometimes very troublesome. It can generally be relieved by pressure. If the bleeding is not checked by elevation of the limb, a proper pad should be applied over the wound and firmly secured in place by means of a bandage, and the hand should also be bound fast to a splint placed upon the back side of the arm. The two arteries at the wrist may be compressed by applying over each a piece of rubber tubing, or in the absence of anything better, pieces of a lead pencil an inch or two in length. It should be secured in place by a rubber bandage firmly applied.

Bleeding from the Gums, from the extraction of teeth, will be best relieved by very hot or very cold water.

In severe Hemorrhage form the Hand or Fingers, the arm should be tightly bandaged. It is also well to have the hand elevated to the opposite shoulder and held in place by a properly adjusted sling.

Hemorrhage from the Arm below the Elbow, or the Leg below the Knee, may be greatly lessened, and sometimes entirely checked, by bending the limb upon itself as strongly as possible.

Hemorrhage from the Stomach, indicated by vomiting of blood, requires perfect rest, the application of ice over the stomach, and swallowing small bits of ice in rapid succession.

Hemorrhage from the Lungs requires heat at the extremities; restraint from coughing; the application of cold to the chest; ice pills; and the inhalation of an atomized solution of tannin, or the vapor of turpentine. See page 1011.

Hemorrhage from the Bowels generally results from hemorrhoids, or piles. Cold water should be injected into the rectum, and the patient should be kept quiet in a horizontal position. See page 914.

Bleeding from a Rupture of Varicose Veins in the lower limbs is sometimes very severe. It may be relieved by the application of a tight ligature a little below the point of rupture.

WOUNDS.

Wounds are generally divided into the following classes: Incised wounds, or cuts usually made with cutting instruments or with glass; lacerated, or torn wounds; contused, or bruised wounds; punctured, or penetrating wounds, and poisonous wounds. Wounds require different treatment, according to their character. Cuts generally heal up quite readily, if properly dressed soon after the wound is inflicted. After the hemorrhage has been stopped, the wound should be carefully washed with pure water, or better, with a solution of carbolic acid, five or ten drops to the ounce of water. When the wound is thoroughly cleansed of blood and all foreign matters, the edges should be brought together and held in position by means of stitches, adhesive plaster or bandages, or all combined. Silk, silver, or iron wire, catgut, and horse-hair are the most suitable material for sutures. If stitches are employed, they should be removed after three or four days, or as soon as the parts have become united. If retained too long, they are a source of irritation. If adhesive plasters are used, narrow strips should be employed, so in case there should be any discharge, there will be an opportunity for it to escape between the strips. When the cut is a long one, adhesive strips will generally require to be reinforced by a bandage. Simple water-dressing, or cloths wet in a solution of carbolic acid, five or ten drops to the ounce, constitues the best dressing for most wounds.

If the end of the finger or toe has been cut off by a sharp instrument, it should be at once replaced, even though it may have been entirely severed. We have known several instances in which the portion replaced in this manner has grown fast. If the severed part is frozen or badly bruised, an attempt to secure union will of course be useless.

Punctured Wounds.—Punctured wounds, when inflicted with a clean, sharp instrument, generally heal quite readily. When the

wound is made by rough, blunt, dirty, or rusty instruments, healing occurs much more slowly, violent inflammation sometimes being produced. In cases in which a nerve is injured, but not completely severed, as in a punctured wound produced by stepping upon a rusty nail, lockjaw is likely to occur; hence, wounds of this character should receive prompt attention.

Punctured wounds quite often heal quickly at the surface, while union does not take place in the deeper tissues. This gives rise to the formation of an abscess, making it necessary to make an outlet by opening the wound with a penknife or lancet. When the wound is made by a thorn or splinter, the foreign body should be removed by means of a pair of tweezers. It is useless to pick at the splinter with a needle, as it will be likely either to be driven farther in or to be broken off. When a fish-hook is caught in the flesh, if it is imbedded beyond the barb, no attempt should be made to withdraw it, but the point should be pushed forward until it emerges from the skin, when it may be cut off by means of a file or pair of pliers, and the balance of the hook withdrawn, or the line may be detached and the whole hook pushed through the tissues. If a crochet hook has been thrust into the flesh, a not uncommon accident, the attempt should not be made to withdraw it directly, but a large knitting or darning needle should be introduced along side of it and placed against the hook, when both may be drawn out together without inflicting further injury.

Not infrequently punctured wounds are made by needles which may either be broken off in the tissues or entirely imbedded. In these cases the parts should be kept perfectly still, as the movements of the muscles of the part may bury it in deeper. If the needle cannot be readily got out, it may be left without any very great danger of doing harm, as it will probably work out of itself. Punctured wounds should be treated by means of hot fomentations or poultices, or compresses of tepid water or carbolic acid lotion.

Torn and Contused Wounds.—These wounds heal much more slowly, as a general rule, than either incised or punctured wounds, never uniting by what is termed *dry* or *primary union*, in which no pus is formed, the parts adhering together at once, leaving no scar. These wounds heal by a process known as *granulation*, or secondary union, which is accompanied by more or less profuse discharge of pus. When the granulations which are formed in the process of healing grow so rapidly as to fill up the wound and aperture above the sur-

rounding tissues, we have what is known as *proud flesh.* The new skin destined to cover the wound is gradually formed about the outer edge, extending inward until the whole is covered. The new tissue formed by this process of healing contracts after the healing process is complete, and forms what is known as scar or cicatricial tissue. Scar tissue becomes after a time like the tissue in which it is produced.

Still another method of healing which is sometimes illustrated in this class of wounds, as well as others, is that known as *scabbing.* This is a process by which the repair of the injured part takes place very rapidly in a manner similar to that seen in primary union. No granulations are formed, but a protective substance is thrown out which when dry forms what is known as scab, beneath which the repair of the injured parts takes place. Artificial scabs may be formed in a clean fresh wound by moistening a bit of lint in fresh blood and placing it over the injured part.

The wound should be thoroughly cleansed as in other cases, and the injured part should be drawn together by means of plasters and bandages. Care should be taken not to employ too strong compression. Either water-dressing or lint saturated with sweet oil containing ten drops of carbolic acid to the ounce, may be employed. If the parts have been badly bruised, hot fomentations should be applied. Heat is especially essential in cases in which considerable portions of tissue have been nearly severed from the body, but have retained a sufficient amount of attachment to justify the attempt to secure union.

For contused wounds, carbolated vaseline, containing ten drops of carbolic acid to the ounce, constitutes an excellent dressing. It should be spread upon a piece of thin cloth and then applied to the injured parts.

If considerable sloughing occurs through the death of the tissues, the parts should be thoroughly cleansed two or three times a day with fine castile soap and water, followed by a one per cent solution of carbolic acid. Portions of the limbs are sometimes so badly torn and mangled that healing cannot take place. In this case the injured part must be removed by amputation. It should be borne in mind, however, that nature's resources are often much greater than might be considered possible, parts apparently irreparably injured being restored to a very useful condition. Hence, when there is even the barest possibility of saving the injured part, amputation should not be performed. We have known instances in which individuals have resisted the advice

of the surgeon who urged amputation, and have recovered with useful arms and legs, who otherwise would have been maimed for life. Recovery is especially likely to occur from severe injuries of the hands and feet.

Dr. Frank Hamilton, of Bellevue Hospital, New York City, has secured some remarkable results in these cases by continuous immersion of the injured part in warm or hot water, the temperature being maintained at 100° or a little above. When there is a marked disposition of the injured parts to become gangrenous or to slough, hot fomentations should be applied, or the parts should be immersed in water as hot as can be borne. Some surgeons have ridiculed this process of "maceration," as they are pleased to term it, but Dr. Hamilton has so thoroughly demonstrated its utility that it is now recognized as one of the most useful means of treating badly lacerated limbs. It is of course necessary that the water should be changed frequently; three or four times a day is none too often.

Dissection Wounds.—The tissues and fluids of animals become very poisonous after decomposition has begun, and are sometimes extremely poisonous in character independent of decomposition, on account of disease—as in the case of death from malignant pustule, glanders, etc.

Medical students, physicians, butchers, veterinary surgeons, and hunters, are the most likely to suffer from wounds of this character. It is said that some barbarous tribes render their arrows and spear points poisonous by smearing them with the fluids of decomposing flesh. It is also claimed by eminent authorities that poisons of this character may be carried by the flesh-fly. The local symptoms of a wound of this character are those of a very painful boil.

The hands should never be exposed in dissecting a decomposing body, especially if any portion of the skin is injured by a scratch or other excoriation. "Hang-nails," or "ag-nails," on the fingers, are frequently means of inoculation in dissection. Touching all suspicious points with nitrate of silver or lunar caustic and smearing the hands with oil or vaseline, are excellent preventive measures. If an abraded surface has been accidentally exposed or a wound inflicted with an infected instrument, the parts should be at once touched with nitrate of silver or pure carbolic acid. When the first symptoms of a poisoned wound appear, as mentioned before, the boil should be freely opened, and nitric acid, pure carbolic acid, or a white hot iron should be applied. A large

Black Hellebore

Foxglove

PLATE XVIII.—*POISONOUS PLANTS.*

nail or three-cornered file heated to a white heat and applied to the diseased part is a less painful remedy than the application of caustics. If the iron is only heated to a red heat, however, the pain is very great.

Bites of Animals.—Dogs, cats, horses, hogs, rats, squirrels, and polecats, frequently inflict bites upon human beings. When these animals are not suffering from rabies these bites generally heal quite readily, though much laceration may result in continued and violent inflammation. If the animal is in a state of rage at the time the bite is inflicted, the wound is likely to assume some of the characteristics of a poisoned wound. We have met several instances in which wounds inflicted by the bite of human beings gave rise to very serious inflammation. In one instance, a surgeon on probing a wound which was inflicted upon the hand, made a diagnosis of dead bone. After making an incision, what was supposed to be a dead bone was removed, which upon examination proved to be an incisor tooth of the individual by whom the bite was made.

Whenever there is the slightest ground for suspicion respecting the condition of the animal inflicting the bite, it should be treated as a poisoned wound, both immediately after the bite is inflicted and subsequently.

Hydrophobia—Rabies.—The symptoms of this disease are itching, burning, smarting, numbness of the part bitten, slight shivering, restlessness, no appetite for food, headache, frightful dreams, distress occasioned by the sight of water or any bright substance, spasm of the throat and shivering on attempting to drink, heat and contraction in the throat, great thirst, spasms of the whole muscular system, secretion of great quantities of viscid saliva, hoarseness, some fever, difficulty in breathing, great debility, death from exhaustion in two to six days. Cases are recorded, however, in which individuals have lingered a longer time, though in a state of such intense suffering that death would have been a grateful release at any moment.

This disease seems to have increased rapidly in modern times. This is probably due to the increasing number of dogs which are kept and allowed to run at large. The disease may be produced by the bite of a dog, wolf, polecat, or any other animal suffering with the disease. The period of incubation varies from a few days to a number of years. Cases have occurred in which the disease made its appearance ten or twelve years after the patient was bitten. The disease does not occur more frequently in hot weather, or the season known as "dog days,"

than at other seasons of the year, as is generally supposed. Statistics show that cases are fully as frequent in cold weather as in the summer season. It is probable that the disease may be developed spontaneously in the dog, but the most common way is by contagion through a bite. Human beings almost always contract the disease through the bite of a rabid dog; but experiments which have been made seem to show quite clearly that the saliva of a person suffering with hydrophobia will communicate the disease as well as the saliva of a mad dog or any other rabid animal. Fortunately but a small proportion of those who are bitten by rabid dogs are inoculated with the poison. No more than one person in twenty-five suffers. It is necessary that the saliva should be introduced into the blood. This can only be done through abrasion of the skin. Cases have been reported in which horses have been inoculated by eating straw upon which a mad dog has lain. Another case is cited in which a man died of hydrophobia, having contracted the disease by using his teeth in untying a knot in a rope with which a mad dog had been tied.

It is probable that in some cases all the symptoms of hydrophobia may occur wholly through fear and without the individual having been infected. This is of course most likely to occur in persons who have been bitten.

Treatment.—Owing to the almost hopeless character of this affection, prevention of the disease is of the utmost importance. This can only be effected by the enforcement of stringent laws against keeping all dogs. The practice of raising dogs as pets is really a reprehensible one. Cases are known in which persons have contracted hydrophobia through the licking of the hand by a dog afterward shown to be mad. There is a popular belief that certain species of dogs, particularly the variety known as the Spitz, are especially liable to this affection. A gentleman said to us not long ago that he would as soon have a rattlesnake in his house as a Spitz dog.

About the only treatment which is at all effectual is that which can be administered immediately after the bite. A strong ligature should be applied between the part bitten and the heart. It should be drawn sufficiently tight to obstruct the circulation. The bitten part should then be cut out, including a little of the sound flesh about it. An iron, as a poker, may be heated to a white heat and applied to the part instead of using a knife. Nitrate of silver or lunar caustic may also be

used for the same purpose, the part being first dried before it is applied. Probably the safest way is, first to wash and dry the body, and then apply lunar caustic or caustic potash. When caustic potash is used, it may be neutralized by washing the part with vinegar after a sufficiently energetic action has been obtained.

Whether treated in this manner or not, the wound itself generally heals kindly at first, but as already pointed out, is likely to become sore and irritable at some subsequent time just before the other symptoms of the disease make their appearance. It is unsafe to employ the mouth in sucking the poison from the wound as has often been recommended, as infection may take place through some slight abrasion in the mucous membrane, which may be so small as to escape the attention of the individual.

A person who has been bitten should adopt the measures recommended instantaneously, if possible, and should then look forward to the future with hopefulness, consoling himself with the fact that a very small proportion of those who are bitten are actually poisoned, and still further with the thought that if inoculation has taken place, it has undoubtedly been rendered inert by the prompt treatment applied. Several thousand cases are recorded in which persons who have been bitten have had the bite treated in this manner, and in no case hydrophobia appeared subsequently. The pain attending the removal of the bitten part by a knife may be prevented by freezing the tissues with ice and salt mixed together in a thin muslin bag and held over the part four or five minutes.

When the characteristic symptoms of the disease are fully developed, very little can be done, except to palliate the patient's sufferings. The vapor bath and the inhalation of oxygen gas are more highly recommended than any other measures of treatment. A physician practicing in India claims to have obtained success by cutting out the scar as soon as an attack is threatened by pain, tenderness, or other peculiar symptoms, thus dividing the nerves which are connected with it, and then inducing free perspiration by the hot-water or vapor bath. Opium, Indian hemp, and chloroform, are useful for the purpose of relieving the patient's sufferings. The severe thirst which sometimes gives patients great distress, on account of their inability to drink, may be relieved in some degree by injecting a considerable quantity of water into the bowels and retaining it as long as possible. The patient may also be

nourished by the employment of nutritive injections when unable to swallow any kind of food.

Snake Bites.—Fortunately venomous snakes are much less common in this country than in many others, especially the tropical portions of the globe. The most common of the poisonous snakes which are found in this country are the *rattlesnake*, the *chickensnake*, *water moccasin*, or *cotton-mouth*, and the *copperhead*, all of which are about equally poisonous. The bite of the rattlesnake is inflicted by means of two fangs which are used only when the snake is irritated. At the same instant that the fangs are inserted by a striking movement upon the part of the snake, the poison is injected through a little canal which runs along the side of the fang. Not every person who is bitten is poisoned, as if the snake bites through clothing, the poison may be absorbed by the clothing, or the fangs may not penetrate the skin sufficiently far to inject the poison into the circulation.

The first symptoms which occur after a person has been bitten, are vomiting, coldness, lividity or yellowness of the skin, nosebleed, weak and irregular pulse, fainting, and perhaps convulsions and delirium. The bitten part swells rapidly and very extensively, and is generally very painful. If life continues for a few days, abscesses form in the swollen parts. Death has been known to occur in less than thirty minutes after an individual was bitten. Life sometimes continues for five or six weeks. A very curious observation which has been made is that hogs do not appear to be injured by the bites of rattlesnakes. It is a well-known fact that they frequently attack reptiles, kill and eat them. It is a popular error to suppose that snakes poison themselves. This is also true in reference to other reptiles.

Treatment.—When a person has been bitten by a rattlesnake or any other venomous serpent, the following measures should be adopted. 1. Place around the limb, a short distance above the wound, a cord, tying it as tightly as possible. A whip-cord, shoe-string, neck-tie, strap, or anything which can be made to answer the purpose of a ligature, may be used. It should be sufficiently tight to cut off the circulation. This may be accomplished by placing a small stick beneath the cord and twisting it as is shown in Fig. 355. 2. If possible, cut out the bitten part, being sure to include all of the poisoned tissue. 3. If there is no sore, ulcer, or abrasion in the mouth, it will be safe and proper to next proceed to suck the wound, as the poison will do no harm if not re-

ceived into the circulation. 4. As soon as possible the wound should be cauterized with a hot iron or live coal, or pure carbolic or nitric acid may be applied. To combat the coldness, the patient should be surrounded with

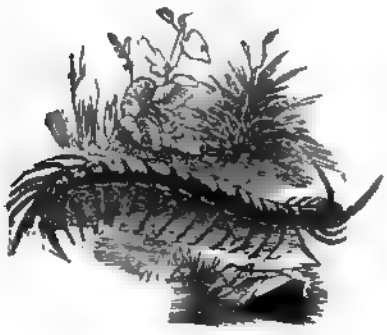


Fig. 357. Centipede.

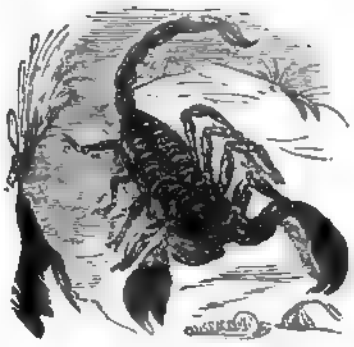


Fig. 358. Scorpion.

hot bottles and warm blankets. Hot tea should also be given to drink. When the heart becomes weak, galvanism over the heart and hot and cold applications to the spine should be employed. There are no known antidotes for the poison after it has been introduced into the sys-

Fig. 361. Tick. *a*, *b*, *c*, Jaws of the Insect.

Fig. 359. Jigger *a*, Female, natural size.

Fig. 360. Bed-bug.

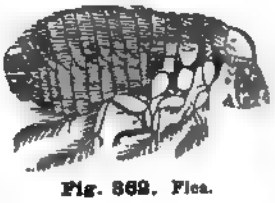


Fig. 362. Flea.

tem. Alcohol in the form of brandy or whisky has been very frequently shown to be no antidote for the poison. It is possible, however, that in some cases life may be saved by the employment of stim-

ulants as a temporary means of combating the tendency to collapse. If the patient is too weak to swallow hot liquids, stimulants should be injected into the rectum. It should be recollected that many of those bitten are not poisoned, to which fact may be attributed the supposed efficacy of many remedies which have been recommended.

When there is great stupor and numbness, the patient should be encouraged to exercise. When too feeble to exercise, the muscles may be kneaded and manipulated. If the breathing becomes greatly impeded, artifical respiration should be employed. Hot fomentations over the stomach and cold applications to the head are also useful. Drinking considerable quantities of fluid to stimulate the action of the kidneys, and the hot water bath, are measures worthy of recommendation.

Bites and Stings of Insects.—The principal insects which are capable of inflicting painful or poisonous bites or stings are fleas,

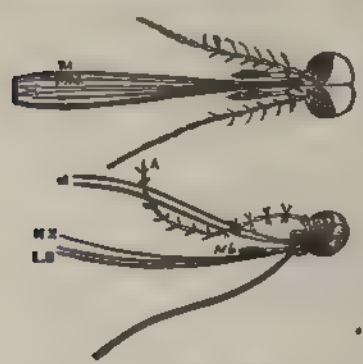


Fig. 363. Lancet of Musquito.

Fig. 364. Tarantula.

bed-bugs, bees, wasps, musquitoes, the midge or buffalo fly, the jigger, ticks, spiders, the scorpion, and the centipede. Figs. 357 to 364.

Treatment. The bites of such insects as the musquito, flea, bed-bug, and midge are generally relieved by bathing the parts with a weak solution of ammonia water, salt and water, or a solution of saleratus or baking soda. The same measures are useful for the relief of bee stings. When the sting is left in the wound, it should be carefully withdrawn. When a person is stung upon the inside of the mouth, a hot solution of salt and water should be used as a mouth-wash or gargle. Hot vinegar is useful for the same purpose. If the parts become very much swollen, so as to produce suffocation, they should be lanced and allowed to bleed freely. The bites of the spider and scorpion are

to be treated upon the same principles. If abscesses or boils form, they should be lanced and treated as other boils.

The bite of the centipede is a much more serious matter, and should receive attention the moment it is inflicted, or as soon as possible, as death has sometimes occurred within a few hours. The part bitten should be incised with a sharp knife and encouraged to bleed freely by sucking or soaking in hot water. The treatment should be the same as recommended for bee stings and the bites of other insects, unless severe symptoms should develop, when the directions given for treatment of snake bites should be followed.

BRUISES.

For severe contusions in consequence of a blow received on any of the soft parts of the body, apply at once fomentations as hot as can be borne. The hemorrhage beneath the skin which frequently occurs in consequence of a severe bruise, may generally be prevented by firm compression immediately after the injury. It is a custom among German mothers when a child falls, striking its head severely, to apply the convex surface of the bowl of a teaspoon immediately upon picking it up. The compression can be kept up by means of a pad and bandage as long as desired.

Much of the discoloration which results from bruises, which is particularly undesirable when the eye is the part injured, may be prevented by the continuous application of hot fomentations for some time after the accident. The sooner the hot applications can be made, the better. The object of this treatment is to cause contraction of the blood-vessels and thus diminish the amount of hemorrhage. Cold is very efficient for the same purpose, but it should not be applied for more than half an hour without removal for a few minutes, as the blood vessels become paralyzed. Alternate hot and cold applications are better than either hot or cold alone. An additional advantage in the use of hot applications is the removal of the soreness of the parts. Hot fomentations are also one of the best means for relieving the pain which accompanies fractures of bones occasioned by a blow or fall.

Lotions of various kinds are recommended for the prevention of discoloration. Probably water alone, equal parts of alcohol and water, or a lotion of common salt and vinegar, are as efficient as any that can be employed. A favorite remedy with some, for bruises and contusions, is tincture of bryonia. We do not think, however, that any of these

remedies are better than hot water faithfully applied. When there is a marked tendency to inflammation, as indicated by heat, redness, swelling, and much pain, cold applications should be vigorously applied. When suppuration has taken place, poultices should be employed. If the patient has high fever and chills, the abscess should be lanced.

Arnica is a popular remedy for bruises, but its use is of doubtful propriety, as it frequently produces local symptoms of poisoning, and often gives rise to disease of the skin of parts to which it is applied. When a person has been much jarred, as by a considerable fall, or more or less bruised all over, a hot full bath, or a hot blanket pack will give more relief than any other remedy. This measure should not be employed, however, when the patient is faint.

In case a person has been bruised about the trunk, or body, by having a tree fall upon him or being run over by a wagon wheel, the services of a skillful surgeon should be obtained as soon as possible. Hot fomentations or a hot full bath may be employed in the meantime.

Bruises upon the head in consequence of severe blows or a fall, often give rise to serious symptoms on account of fracture of the skull and compression of the brain, or from simple concussion, or jarring, of the brain. If a person is insensible or partially paralyzed in consequence of an accident in which the head is injured, surgical advice should be secured at once. As a general rule, continuous cold is the best application for injuries resulting from severe blows upon the head. Fomentations may be applied at intervals to relieve soreness, but the application should be not longer than five or ten minutes at a time.

Injuries to the joints require perfect rest and the application of cold to the injured part, until danger of inflammation is past, when the joint should be carefully moved daily to prevent its becoming stiff.

STRAINS.

In consequence of severe exertion, some of the fibres of a muscle or of its tendon may be ruptured. This is what is termed a strain. Hot fomentations should be applied, and the injured part kept at rest. If necessary, large adhesive straps should be applied over the injured part to keep it quiet. Sometimes complete rupture of the tendon occurs. This is most likely to occur in the largest tendon of the body, that known as the tendo Achillis, which connects the muscles of the calf to the heel bone.

In treating this accident, a slipper should be placed upon the foot, to the heel of which a strap is attached. The upper end of the strap should be attached above the knee in such a way as to extend the foot completely and partly flex the leg.

SPRAINS.

A sprain consists of a laceration or rupture of the ligaments surrounding and supporting the joints, in consequence of unnatural strain brought to bear upon them. To relieve the pain, apply fomentations; to prevent inflammation, apply cold after the pain is relieved. The joint should be kept at perfect rest until the inflammation has subsided. A person should never attempt to walk with a sprained ankle or to use a joint that has been injured in this way until the inflammation has been entirely subdued, as permanent injury to the joint may result unless rest is secured. In some cases, the application of a pasteboard splint upon either side of the joint, secured in place by the bandage, is a useful measure.

BURNS AND SCALDS.

If possible, immediately immerse the injured part in water at about the temperature of the body. Very extensive burns in which considerable portions of the skin are destroyed, are best treated by the continuous bath, the patient remaining immersed in water until the new skin is formed. Patients have been kept immersed in this way for months, in some instances with the result of securing recovery when no hope was afforded by any other means. No harm results from prolonged immersion, provided the water is changed as it should be, once or twice a day. An excellent means of relieving the pain of an extensive burn, is the application of common baking soda. This generally relieves the pain to a very great extent in a short time, and seems to promote the healing process wonderfully. Portions of charred clothing and other foreign matter should be removed by a stream of warm water, or immersion of the part in warm water, and the injured surface should be thoroughly covered with the dry soda. The part should then be covered with cotton-wool or common wadding. Carron oil, consisting of equal parts of lime-water and linseed oil, is a favorite remedy with many, but has the disadvantage of being very dirty and having an unpleasant odor. Carbolated vaseline, containing ten drops of carbolic acid to the ounce, is an excellent application. It should be spread upon thin cloths with a case-

knife to the thickness of a knife-blade, and applied over the burnt surface. When suppuration occurs, the injured surface should be thoroughly washed two or three times a day with warm water and castile soap, and afterward rinsed with a one per cent lotion of carbolic acid. If the burned parts are very badly swollen with œdema, as is frequently the case with burns of the face and scalp, hot fomentations should be applied for the purpose of stimulating the circulation.

We very recently had the opportunity of trying this method of treatment in the case of an engineer who was badly burned by an explosion of gas, and with the most excellent results. A remedy which has been recently recommended very highly is *thymol*. It is to be used in the proportion of one part to one hundred of linseed oil at first, and afterward in proportion of one part to one thousand of oil. It should be applied several times a day.

When the patient suffers with chilliness and other symptoms of shock, the treatment recommended for this condition should be given. See page 1395. The fever which frequently accompanies extensive burns, especially after suppuration begins, should be cautiously treated by means of tepid sponging, full baths, and large tepid compresses about the body.

Scalds of the mouth, which occur most frequently in children who sometimes attempt to drink from the spout of the tea-kettle, require a warm moist atmosphere. This may be secured by enveloping the head of the patient in a blanket or oil-cloth and conducting beneath the covering steam from a tea-kettle by means of a rubber hose. A better means, however, of using warm vapor in these cases is the steam inhaler. See page 802. If there is great swelling of the epiglottis, so as to interfere with the breathing, lancing sometimes becomes necessary.

FRACTURES.

Fractures of bones are very common in connection with other accidents. Old people are especially liable to injuries of this kind on account of the increased proportion of earthy matter in the bones in old age. Fractures of long bones in children are very likely to be but partial, or what is known as "green-stick" fracture. Fractures may occur from a blow, fall, or violence of any kind applied directly to the limb, or may result from indirect violence, the bone being broken in consequence of a blow received upon some other part of the body, as in fracture of the collar-bone from a fall upon the hands, or the base of the

Fool's Parsley.

Flowers and Root of Aconite. [illegible]

PLATE XIX — *POISONOUS PLANTS*

skull from force received upon the top of the head. Bones are also sometimes broken in consequence of violent muscular action, as in fracture of the knee-pan which occasionally occurs in consequence of violent efforts in jumping.

Fractures are variously classified as complete or incomplete, transverse or oblique, crushed, impacted, simple or compound. Simple fracture is one in which the skin is not broken. In compound fracture the injury to the bone is accompanied by a lacerated wound of the part. This is a much more severe accident than simple fracture.

Fractures are indicated by pain, swelling, change in the form of the injured part, and a grating sound or crepitus felt by rubbing the ends of the fragments together. Loss of power of the voluntary motion in the limb, and an unnatural degree of mobility shown upon manipulation, are other characteristic signs. In examining limbs supposed to be fractured, they should be carefully compared with those of the opposite side.

The Healing of Fractures.—The bones heal very slowly compared with most other tissues. The process of repair consists in the throwing out of a sort of cement about the ends of the fragments of the injured bones, which forms what is known as a *callus*, which is deposited in such a way as to constitute a sort of splint for the bone. At first, the callus is somewhat cartilaginous; after a time it becomes changed to bone. In very rare cases, the bones fail to unite, though this does not, according to Prof. Hamilton, occur in more than one case in five hundred. More or less deformity remains even if the bones are exactly coapted to each other. If the bones are not accurately set, or if after being set they are not properly kept in place, a considerable degree of deformity may result.

In some cases union takes place with the bones at more or less of an angle with each other. A deformity may also result from a shortening of the fractured limb due to overlapping of the fragments. This is especially frequent in fractures of the thigh in which more or less shortening generally occurs, the amount varying from a small fraction of an inch to two or three inches. If the shortening is not more than an inch, it will scarcely be noticed by the individual himself, and will not be observed in his walk.

Stiffness of joints in the vicinity of fractures is often found after recovery from the injury, being due either to interference with the motion of the joint by the callus, or to long-continued disuse of the joint.

General Treatment of Fractures.—The limb should be restored at once as nearly as possible to a proper condition, and hot fomentations should be applied to relieve and prevent soreness and inflammation. As soon as possible, a surgeon should be called to set the limb. This is not generally nearly as painful an operation as commonly supposed, it being seldom necessary to apply any very great amount of force to get the parts into proper position. In case very great swelling has occurred before an opportunity is afforded to set the bones, hot fomentations or alternate hot and cold applications should be employed until the swelling and inflammation are reduced, before any attempt is made to set the broken bones.

The greatest difficulty against which a surgeon has to contend in the treatment of fractures is the contraction of the muscles, by means of which the fragments are drawn apart. This may generally be overcome by putting the limb in a condition in which the muscles will be as completely relaxed as possible.

Fig. 365.

In setting bones, the lower fragment is drawn firmly down, the upper one being held in position, or drawn in the opposite direction. This is always necessary to cause the ends of the bones to come together properly. It is generally necessary, however, to make some degree of pressure upon the sides in order to secure perfect adjustment of the parts. After the bone has been set, a proper splint or other apparatus should be applied in such a way as to keep the parts in position. In measuring limbs to see if they are of the same length, as should always be done, care should be taken to put both limbs in the same position, and to take measurements from the same points.

Compound fractures require very careful management, and with the best of care not infrequently result in considerable deformity.

Bandages.—Bandages are made of cotton, cotton flannel, ordinary drilling, or of very thin, loose muslin, according to the purpose for which they are to be used. In the application of bandages to fractured limbs great care should be taken to apply them with even pressure, and not so tight as to interrupt the circulation of the blood. Figs. 365 and 366 represent the roller bandage and the mode of applying it, and Fig. 367 the appearance of the limb after the bandage has been properly applied. The width of bandages varies from one to three or four inches. In making them, care should be taken to remove all loose threads from the edges.

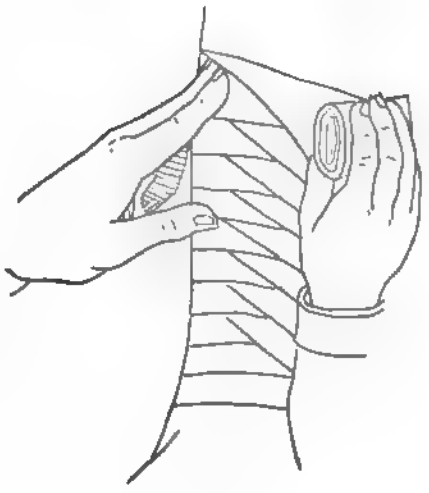


Fig. 366.

The plaster-of-Paris bandage is very useful in the treatment of many fractures. It is made by rubbing into a cloth bandage with loose meshes dry plaster-of-Paris, as much being rubbed in as can be held by the cloth, the bandage being rolled as the plaster is rubbed in. In using, the bandage should be placed in water for two or three minutes and then applied to the limb as rapidly as possible.

Bandages saturated with flour starch are sometimes employed. Glue, shellac, silicate of soda, or soluble glass, and parafine, have also been used in a similar manner. The advantage of bandages of this kind is that they obviate the necessity for splints—themselves forming most perfect splints—giving the parts equal pressure on all sides. In case it is necessary to remove the bandage occasionally for the purpose of giving the limb attention, it may be easily done by cutting open one side and springing the sides so as to allow the bandage to be slipped off the limb.

Fig. 367.

Splints.—These are supports of various kinds used in the treatment

of fractures. They are composed of various materials, and are of different forms, according to the parts to which they are to be applied. The old-fashioned wooden splint is now largely displaced by coarse flat splints which are supplied in sets. Leather, gutta-percha, and various other substances are frequently employed, and possess the advantage that they may be molded to any part after having been rendered flexible by soaking in hot water. Heavy pasteboard or binder's board may be used in the same way. In case of emergency a shingle, or a piece of thin board of any sort, may be made to answer the purposes of the splint.

In the use of splints, they are padded by strips of folded flannel or strips of cotton, and are placed on either side of the limb in such a way as to hold the ends of the fractured bone together, the bandage being applied around the outside. Special appliances are required in the treatment of special fractures, such as apparatus for extension, cradles for suspending the limbs, fracture boxes, inclined planes, etc.

Pyæmia and Septæmia.—These are conditions of the system in which there is general poisoning from the absorption of pus or germs They often occur in cases of compound fracture, the ends of the broken bones wish their numerous open blood channels presenting the most favorable opportunity for absorption. The occurrence of pyæmia or septæmia is indicated by fever, the pulse being small, quick, and irregular. Delirium and stupor are often present. Severe chills, followed by fever and profuse sweating, with extreme depression, are also present. If the wound is discharging, the matter changes from the natural creamy color and consistency, to a bloody or dark thin fluid. The skin about the wound becomes bluish or purple, healing ceases, and the wound gaps open. The joints are affected with rheumatic pains, sometimes abscesses forming in them. Breathing is difficult and increased in frequency.

Pyæmia occurs in connection with other conditions, as well as in fracture. Whenever it occurs, from whatever cause, the wound from which absorption takes place should be thoroughly disinfected by washing with carbolic acid alone, or a solution of permanganate of potash. The sick-room should be thoroughly ventilated. Disinfections should be thoroughly used for the purpose of disinfecting the discharges from the body. The diet should be simple, but unstimulating in character If the stomach will not receive food, nutritive injections into the bowels should be employed. Chilliness should be combated by hot jugs and warm

wrappings. If the fever rises high, cold spongings and cool enemas should be employed.

Fractures of the Skull.—In fractures of the bones of the skull, some of the fragments are very likely to become depressed upon the brain, occasioning loss of consciousness, or other disturbances of the nervous system. Sometimes blood-vessels are enlarged, so that a large clot is formed in the brain, giving rise to symptoms similar to those which result from apoplexy.

The proper treatment of these cases consists in lifting up or removing altogether the depressed portion of bone, an operation known as trephining.

Fractures of the Spine.—When the back, or spinal column, is broken, the spinal cord is almost always more or less injured, the result of which is paralysis of the lower extremities. In these cases the bowels and bladder, as well as the lower extremities, are usually paralyzed. The patient should be kept quiet in bed. The urine should be drawn with a catheter, and the bladder should be washed out daily. Complete recovery is very doubtful.

Fig. 369.

Fracture of the Nose.—Fracture of the bones of the nose is readily recognized by the characteristic deformity. Great swelling usually occurs in a very short time, sometimes making it difficult to tell whether there is fracture or not. Hot fomentations should be applied at once, as by this means pain and swelling, and subsequent inflammation may be very much diminished. A pencil should be passed up into the nose, and by its aid, together with manipulation by the fingers, the depressed bone should be lifted into position. The bones may be held in place by means of a little wooden plug smeared with tallow, or plugs of cotton saturated with sweet oil.

Fracture of the Lower Jaw.—This is generally the result of a blow upon the face. It may be most easily recognized by an examina-

tion of the teeth, which are thrown out of line when the jaw is fractured. After the broken parts are put in proper position, a bandage should be applied as shown in Fig. 368.

Fracture of the Upper Jaw.—Fracture of the upper jaw occurs very rarely. The parts should be put in as good position as possible, and held in place by adhesive straps and bandages.

Fracture of the Collar-Bone.—This is the most frequent of all fractures. It occurs most often in children. It is indicated by pain, dropping of the shoulder, swelling over the broken bone, irregularity, and a grating sensation when the shoulder is moved. There is no

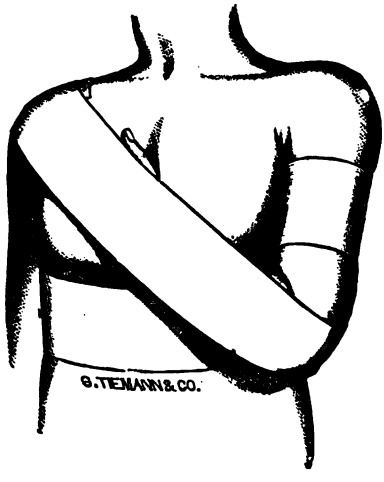


Fig 369. Front View.

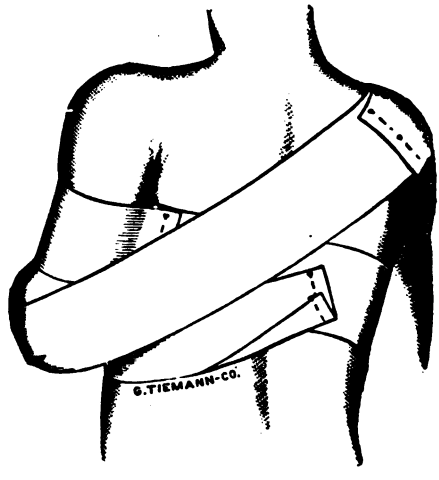


Fig. 370. Back View.

difficulty in setting a fracture of the clavicle, but it is by no means easy in all cases to hold the fractured ends in position. The most simple method of treating fracture of the clavicle is a figure-of-eight bandage made out of a pair of suspenders which are passed in front of each shoulder, and crossed and buckled behind, making a figure 8, the shoulders being included in the loops. By this means the shoulder of the injured side may be drawn back, so that the ends of the bones are brought near together. Our respected teacher, Prof. Sayre, of Bellevue Hospital College of New York, has devised a very simple method of treating these cases by means of adhesive straps, as shown in Figs. 369 and 370.

Fracture of the Ribs.—In cases of injury to the chest, it is often found very difficult to determine whether or not the ribs are broken. When fracture has occurred, there is generally sharp pain at a definite point, which is increased by deep breathing or coughing. In cases of fracture, these symptoms are generally aggravated when the patient lies down. Sometimes grating of the ends of the bones, or crepitus, can be distinctly made out.

In doubtful cases it is best to apply a broad bandage tightly about the chest; this will usually give relief. When the fracture can be made out with certainty, strips of adhesive plaster should be applied to the affected side in the manner indicated in Fig. 371.

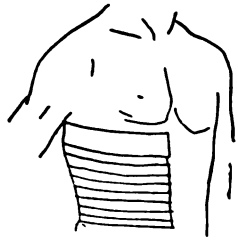


Fig. 371.

Fractures of the Humerus, or Arm-bone.—A fracture of this kind may occur near the shoulder, the elbow, or midway between these points. When the fragments are impacted—that is, crowded together by the force of the blow,—the arm should be placed in an easy position and kept quiet. If the fragments are not attached or impacted, they should be set. The splint should be applied in such a way as to hold the fragments in place. The simplest method is that of Dr. Hamilton. The splint recommended by him may be made of pasteboard, felt, leather, or other material. Its form is shown in Fig. 372. It should be long enough to reach above the point of the shoulder. The edges of the notch in the upper end should be brought together by means of stitches, and while flexible the splints should be molded to the shape of the shoulder and arm, and allowed to become dry. Another short splint should be placed upon the inside of the arm. Each splint should be padded or covered with woolen cloth; it should then be secured to the arm by means of rollers, and the arm placed in a sling. It is well to bandage the arm before applying the splint, beginning at the fingers.

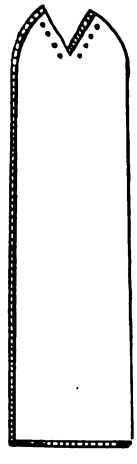


Fig. 372.

This method is applicable to fractures in the upper part of the arm. When the fracture occurs at the middle or lower part of the arm, a splint in the form of a right angle and of sufficient length to reach from the shoulder to the wrist should be employed for the inside of the

arm, a short splint reaching from the shoulder to the elbow being placed upon the outside. After the fragments have been adjusted, the splints, properly padded, should be secured in place by proper bandages. When the elbow or other joints are much injured by the accident producing the fracture, the pain and inflammation should be subdued by the use of hot and cold applications before the splints are applied When any of the nerves of the arm are injured so as to produce paralysis, the application of electricity should constitute a part of the treatment.

Fractures of the Fore-Arm.—Either one or both bones of the fore-arm may be broken, but the treatment remains the same as in other cases. The splints required for this fracture should be of sufficient length to reach over to the end of the elbow and the middle of the palm. They should be a little wider than the arm itself, so as to take off the pressure of the bandage. Care should be taken not to cut them so wide that the arm will be loose. The splints should be applied in such a way that the elbow can be flexed. In setting the bone, the arm should be drawn with the palm upward so as to make the bones parallel inside of the hand. The splints should then be applied and the arm drawn with the thumb upward. While held in this position, straps of adhesive plaster may be applied around the end of each, which may be afterward reinforced by a bandage.

When the radius, or outer-bone of the arm, that upon the thumb side, is broken, the hand drops to one side. This fracture, known as Colles's fracture, is occasioned by a fall upon the hands. It is also sometimes called "back-door" fracture, because it so frequently occurs from slipping upon the ice in stepping from the back-door. The term "silver-fork" fracture is also applied to it on account of the shape of the wrist which resembles the bend at the point where the shank of the fork joins the tines.

The limb is very rarely perfectly restored. After this accident, more or less stiffness of the wrist generally remains. This fracture is best treated by means of a pistol-shaped splint for the inside, reaching from the elbow to the ends of the fingers, and a short, strait splint, reaching from the elbow to the wrist, for the outside of the arm. The splints should be carefully stuffed or padded on the inside. The hand should be brought up into position as nearly as possible and the splints applied and kept in position by a roller bandage. Considerable

care should be taken in the treatment of this fracture, as not infrequently considerable swelling occurs, which sometimes results in loss of the hand. After the splint has been adjusted, the arm should be put in a sling.

Fracture of the Bones of the Hand.—Fractures of this kind may occur from a blow upon the back of the hand or striking some hard object with the knuckles. In treating it, the ends of the fragments should be placed in position, and a ball of yarn placed in the hand for the patient to grasp. The bandage should then be applied. A little deformity remains, but the usefulness of the hand is not impaired.

Fracture of the Fingers.—There is no difficulty in recognizing fractures of the fingers. They are very easily treated. It is only necessary to see that the fingers are in a natural position, and that the palmar surface is not drawn to one side. Even if the soft parts as well as the bones have been completely severed, if the parts have not been crushed too much, union will often take place, and the severed fragments should be brought together and kept in position. A piece of pasteboard or wood, or a perforated zinc or tin, should be placed upon the palm side of the fingers after the fragments have been adjusted, and the bandage should be applied. The starch or plaster bandage is very useful in these cases.

Fracture of the Thigh.—Fractures of the thigh may occur at the neck of the femur, its most constricted portion, or in some portion of the shaft. Fracture of the neck is most likely to occur in old people. It has been produced in elderly persons by a very slight degree of violence, as tripping on the carpet or door-sill, making a misstep, or some other equally insignificant fall.

Fracture of the neck is generally produced by a blow or fall upon the foot, or knee, or upon the outside of the hip. Pain and swelling are present as in other fractures. There is a slight change in shape of the hips. The outer portion of the injured hip being flatter than the corresponding portion of the outer side. The foot is drawn outward, the limb is shorter, and there is loss of power to use the limb.

Fractures in the shaft of the thigh are most often the result of direct violence, as a severe blow, being run over by a wagon, a fall from a considerable height, etc. The symptoms of this form of fracture are change in the form of the limb, unnatural motion, shortening of the limb, and turning of the foot outward. In determining the length of

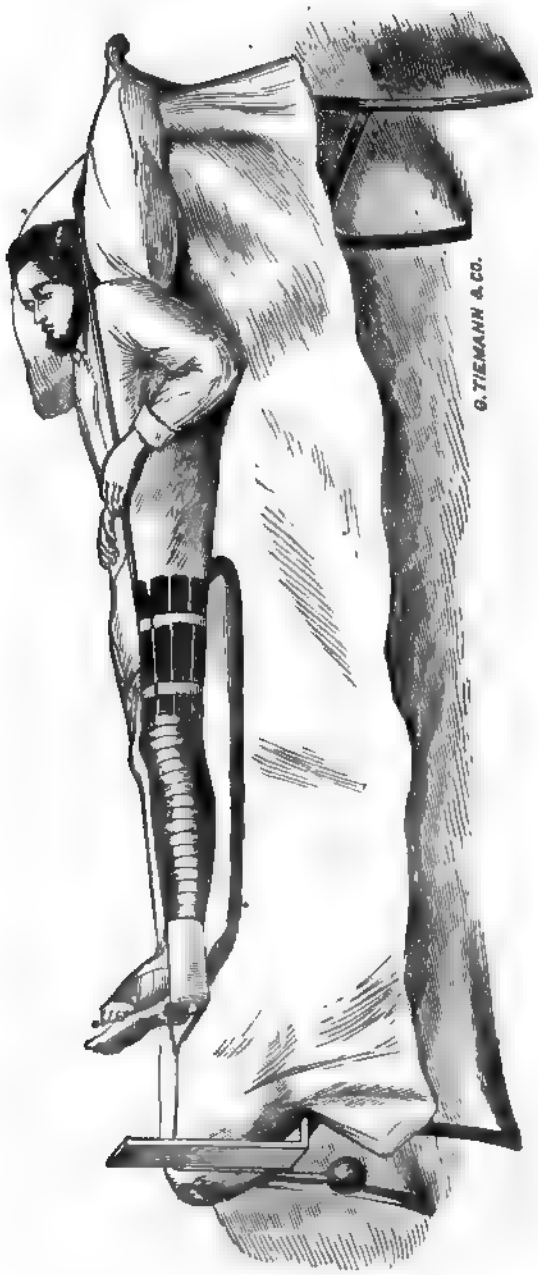


Fig. 373

the shortened limb, in fracture of the thigh, great care should be taken in measurement. The clothing of the patient should be removed, and he should lie on a flat surface, the legs parallel with each other and in line with the body. One end of a string or tape-line should then be held at the navel while measurements are taken to the upper side of the bony prominence on the inside of each ankle.

This form of fracture should receive the attention of a careful surgeon, —as even with the very best of treatment, more or less deformity will be likely to result. Various methods of treatment are recommended. When the bones are impacted, all that is required is that the patient should remain in bed and keep the limb quiet while the healing is taking place. A plaster-of-Paris bandage is very useful in these cases. When the fragments are not driven together, any one of several methods may be employed. Probably the safest of these

Garden Night Shade

Indian Datura

PLATE XX — *POISONOUS PLANTS*

is that known as extension, in which the patient is placed in bed and extension applied to the injured limb in such a way as to overcome the tendency to shortening, which is likely to occur in consequence of contraction of the muscles. A very convenient form of apparatus of this sort is shown in Fig. 373, in which the weight is attached by a rope passing over the pulley to a broad band of adhesive plaster which is secured to the leg by a roller bandage. Counter extension is made by means of a strap, which passes between the thighs and is attached to the upper end of the bed-stead. Sometimes the counter extension is made by having a foot-board raised eight or ten inches, so that the weight of the body will counteract the tendency of the weight to draw the body back to the foot. Some surgeons employ the plaster-of-Paris bandage in these cases. Others recommend very highly the double-inclined plane. Two or three months are required

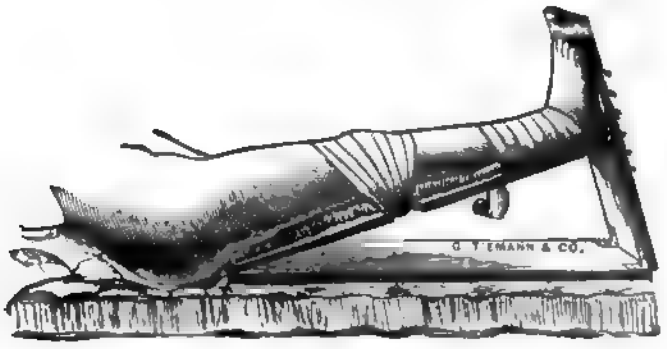


Fig. 374.

to effect a union in these cases, and from one-fourth of an inch to two inches or more shortening will be likely to occur in most cases.

In many cases the limb is never restored to its full usefulness, always remaining weak and lame. When the fracture is treated with the limb extended, the knee is generally found to be stiff when the dressing is removed, and this difficulty must be overcome by fomentations and daily manipulations. In cases in which more than partial recovery occurs, it is generally ten or twelve months before the patient is entirely well.

Fracture of the Knee-pan.—The patella, or knee-pan, may be broken transversely or vertically. In some cases it is shattered by a severe fall or blow. This fracture is generally occasioned by violent

jumping, or a sudden movement to avoid falling backward. The fragments of the broken bone generally unite in six or eight weeks, but it is quite rare that actual bony union takes place, the parts being generally bound together by a sort of ligament. Very little inconvenience is experienced, however, unless the ligament becomes stretched, as is sometimes the case even to the extent of three or four inches.

The best method of treatment is that suggested by Prof. Hamilton which is so well shown in Fig. 374, that further description is unnecessary.

Fracture of the Leg.—Either one or both bones of the leg may be fractured. The tibia, or inner bone of the leg, which forms the shin, although much stronger and larger than the outer bone, is most frequently broken on account of being less well protected by muscles. What is known as Pott's fracture is an injury in which the outer bone of the leg is broken at a point about three inches above the ankle, and the inner ankle is either broken or separated from the heel bone by laceration of the ligaments. The result of this accident is turning of the sole of the foot inward. When the tibia is broken, the point of fracture can generally be quite easily found by feeling along the shin. The outer bone is so thoroughly covered by muscles that it cannot be so easily felt, but the crepitus can generally be distinguished.

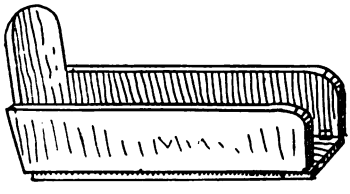


Fig. 375.

Treatment.—The bone should be set, and the limb placed in the fracture box, an illustration of which may be seen in Fig. 375. A piece of cloth a yard long and about two feet wide should be placed in the box in such a way as to cover the bottom and sides, the edge of the cloth hanging over outside of the box. A quantity of dry bran or sand should next be placed in the box, a sufficient amount being poured in to form a cushion for the foot and lower part of the leg, to the shape of which it should be molded. Bran or sand should be poured in around the sides of the leg. Bran or sand is necessary only in cases in which there is a wound, which are very frequent in this form of fracture. Dr. Hamilton's method of treating fractures of the leg is by means of the plaster-of-Paris bandage. Ordinary splints of pasteboard or other material may also be successfully used in cases of fracture of

the lower end of the fibula in which the foot is turned to one side. The legs should be supported on pillows or cushions, while fomentations are applied over the seat of the injury until the inflammation is reduced. Then the foot should be bound and held in position by means of a splint extending from above the knee to a few inches below the foot. The splint should be carefully stuffed and applied to the inner side of the limb, the foot being strapped down in such a manner as to bring it into its natural position. The plaster-of-Paris splint is also applicable to these cases. As the ankle is apt to be stiff, the splints should be removed as early as possible. Passive movements should be employed diligently for the purpose of overcoming the stiffness.

Fractures of the Bones of the Foot.—The bones of the heel and the ankle are the most likely to be broken. Fractures of the bones of the foot are sometimes very difficult to recognize. Stiffness of the ankle joint, with a limping gait, are likely to result from severe fracture of the bones. Although union generally takes place quite promptly, it is often several months before the patient is able to use the foot much in walking. Before splints are applied, hot fomentations should be employed to reduce the soreness and inflammation. When this has been accomplished, splints should be applied in accordance with the principles already explained.

DISLOCATIONS.

Dislocations are often very easily confounded with fractures; in fact, the two injuries are often inflicted at the same time. The chief distinguishing features of dislocations are, unnatural position of the limb, altered shape of the injured joint, and less than the natural degree of motion in the joint. Pain and swelling, and more or less discoloration, are also usually found in the vicinity of the affected joint.

Treatment of Dislocations.—The first thing to be accomplished is reduction of the dislocation, or returning of the bone to its natural position. This should be accomplished at as early a moment as possible, and can generally be done if attempted immediately after the accident without any very great difficulty, by simply pulling upon the limb in such a way as to draw the bone toward the socket at the same time manipulating the displaced end in such a way as to facilitate its return to its natural position. One of the great obstacles in the way of reducing a dislocation is the contraction of the muscles, which is in

some degree involuntary, though in the greater part voluntary, as is shown by the fact that if the patient's attention is diverted, the muscles become relaxed and the process of reduction is greatly facilitated. This may generally be accomplished by asking the patient a question, or speaking to him in a rather loud and quick tone of voice just at the time the reduction is to be attempted. In very bad cases the use of chloroform or ether is necessary in order to cause the muscles to relax. In moderate cases, however, continuous and firm pulling upon the limb will, after a time, tire the muscles so that they will relax and allow the bone to return to its place. After the reduction has been accomplished, the limb should be kept perfectly quiet until the torn ligaments of the injured tissues shall have had time to heal. It is generally necessary to apply bandages to the part, and sometimes a splint is required. When there is much pain, swelling, or inflammation, hot fomentations should be applied, or a hot shower or pour may be used If hot applications increase the pain, cold or even ice compresses should be employed.

In some cases, alternate hot and cold applications give most relief. The drop bath, Fig. 208, is very useful in many of these cases. A joint which has been injured by dislocation should be used very little for three or four weeks. If it becomes stiffened, hot fomentations and gentle manipulations will soon restore it to a useful condition. It should be recollected that a bone which has once been put out of joint, is very liable to get out of joint again, and special care should be taken to protect it from any violence.

Dislocation of the Jaw.—Dislocation is usually recognized by the chin being thrown to the opposite side if the displacement occurs but on one side, and in wide gaping of the mouth when the dislocation occurs upon both sides at once. This accident is most frequently caused by yawning or violent laughing. It may be easily reduced by passing the thumbs, well protected by a bandage or towel, to the back side of the mouth and making a downward pressure upon the back teeth. When this is done the muscles of mastication draw the bone into place. Care should be taken to avoid a recurrence of the accident, to which a person having once suffered is especially liable.

Dislocation of the Shoulder. The most common of all dislocations is displacement of the upper end of the arm-bone into the axilla. This may generally be recognized by measuring the shoulder

by means of a tape passed under the armpit and over the top of the shoulder. If one shoulder is dislocated, it will be one or two inches larger than the sound shoulder. This dislocation may usually be easily reduced in the following manner: The patient being seated in a chair, the operator stands by his side, and placing one foot upon the edge of the chair, brings his knee into the axilla and forcibly bends the arm over it. In case this does not succeed, the patient should lie down upon the sofa while the operator, standing by his side, places his foot in the armpit, and taking hold of the hand of the patient or of

Fig. 376.

the ends of a stout bandage which is fastened about the arm, pulls steadily and with considerable force for one or two minutes; then bring the arm to the center of the body, and the head of the bone will almost always slip into its socket at once.

The old-fashioned plan of reducing dislocations of the shoulder was by means of the pulley, as seen in Fig. 376. This method is now seldom employed, however. It is found that in many cases dislocations of the shoulder can be readily reduced by gentle manipulation applied with very little force. In case a person suddenly suffers dislocation of the shoulder while alone, as in the field, he may succeed in reducing the dislocation himself by reaching over a fence and grasping one of the lower boards with the hand of

the injured side, then throwing his weight upon the affected side in such a way as to sustain the weight of the body by the injured shoulder. In some cases the application of an apparatus is necessary to retain the dislocated shoulder in position until the lacerated ligaments have an opportuity to heal. Fig. 377.

Dislocations of the Elbow.—When the elbow is dislocated backward, the most common form, the point of the elbow will be found projecting much more than naturally, and it will be impossible to bend the arm more than to a right angle, though it may be drawn out without pain. This dislocation can generally be reduced very easily by simply placing the knee in the bend of the elbow and bending the arm around the knee while pulling upon it with considerable force. After the dislocation is reduced, the arm should be placed in a sling. Hot fomentations should be applied to relieve soreness, and if inflammation threatens, cool or ice compresses should be used, as much as is necessary.

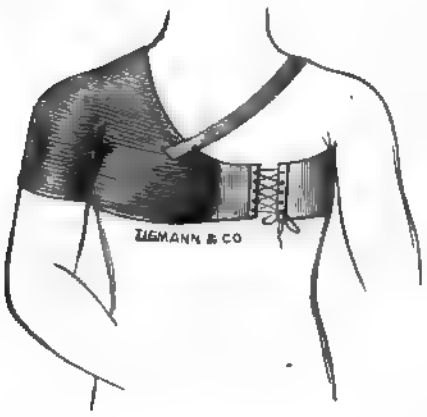


Fig. 377.

Dislocation of the Wrist.—This is a very rare displacement. It is indicated by an abnormal position of the hand and immobility of the wrist joint. All that is required is firm pulling upon the hand, which causes the displaced bones to slip into position.

Dislocation from Pulling the Arm.—This is a form of dislocation which occurs in young children in consequence of being pulled forcibly by the arm. There is still some question among surgeons as to the exact nature of the dislocation, some claiming that the dislocation is at the wrist, and others at the elbow joint. It is probable that either joint may be affected. The hand will be found turned upon the palm, the patient being unable to turn it backward. All that is necessary is to grasp the hand and forcibly turn it upon the back, which will cause the bones to resume their proper position.

Dislocation of the Thumb and Fingers.—Dislocation of the thumb is readily recognized. Fig. 378. Dislocations of the fingers are equally evident. These displacements can be readily reduced by pulling upon the thumb or fingers. If success is not readily obtained, a better purchase may be secured by means of a very simple contrivance, such as is shown in Fig. 379, which can be easily made by any one in a few minutes. A piece of shingle about a foot in length and an inch and a half in width should be perforated near one end with two pairs of holes, from an inch and a half to two inches apart, into which narrow tapes should be passed, by means of which the finger should be made fast to the shingle. By grasping the short end of the shingle, the operator can readily draw the dislocated bone into position.

Fig. 378.

Dislocation of the Hip.—The simplest plan of treating dislocation of the hip is that known as the automatic method. The patient lies upon the floor on his back. The operator raises the injured limb to a right angle, and places the foot of the patient between his legs in such a way that the back of the foot rests against his sacrum. The limb is then firmly grasped just below the knee, and the patient is lifted until the hip is raised from the floor. The body should be

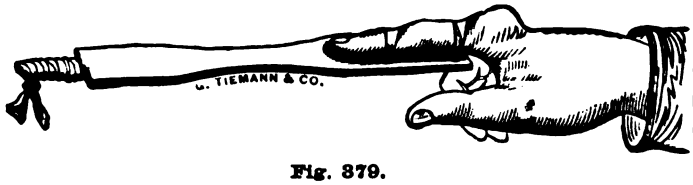


Fig. 379.

held in this position for a minute or two, by the end of which time the head of the femur will be heard to click into its socket. In case the effort is not successful, both limbs should be treated in the same way at once. If neither effort is successful after several trials, a surgeon should be called ; or if the services of a physician cannot be secured, the method by manipulation may be employed. In this, the operator with one hand grasps the affected limb by the ankle, and flexes the limb nearly to a right angle, placing the other hand just below

the bend of the knee. The knee should now be carried outward, the limb being also twisted in the same direction and then brought slowly down to its natural position. If neither of these means succeed, it may become necessary to resort to the old-fashioned method of reduction, by means of pulleys, as shown in Fig. 380.

Dislocation of the Knee-Joint.—This form of dislocation is very infrequent, owing to the thorough manner in which the knee-joint is supported by ligaments. The dislocation is very easily reduced. Long-continued treatment is generally necessary, on account of the extensive injuries done to the soft parts of the surrounding knee. Alternate hot and cold applications are generally required, together

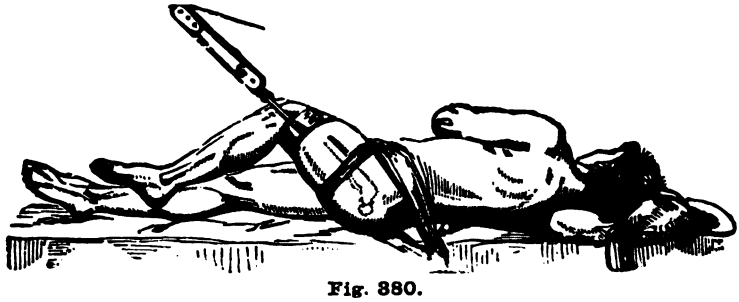


Fig. 380.

with perfect rest of the joint for many weeks. In the majority of cases the integrity of the joint is rarely fully restored. The patient should not attempt to walk upon the limb unless it is supported by a bandage of some sort firmly applied.

Dislocation of the Ankle.—This accident is generally the result of jumping. In nearly all cases, more or less fracture of the ends of the leg bones also occurs. Dislocation of the ankle joint is always present in Pott's fracture, already described. The dislocation is easily reduced by pulling upon the foot and pressing the displaced bones into position. Properly prepared splints should be applied to keep the parts in position. Hot and cold applications should be made to prevent and relieve inflammation.

Dislocation of the Bones of the Foot.—Backward dislocations at the ankle joint are generally irreducible, on account of the great strength of the heel cord, or tendo Achillis. This cord has been sometimes divided; but this should rarely, if ever, be done, since by prolonged rest and proper treatment combined, later, with passive ex-

ercises and persistent efforts on the part of the patient, the foot can be made a very useful one, even though the dislocation remains unreduced.

Other dislocations of various bones of the foot sometimes occur in consequence of great violence. They can often be reduced by careful manipulation, but in some cases resist all efforts at replacement. The displaced bones will generally accommodate themselves to their abnormal position sufficiently to render the foot very useful, even though they cannot be restored to their proper position.

Dislocation of the Toes.—This is a very rare accident. It should be treated in essentially the same manner as that described for dislocation of the fingers.

MISCELLANEOUS ACCIDENTS.

Treatment of the Drowned.—In the treatment of persons in whom life seems to be extinct in consequence of drowning, the two most essential measures are, the restoration of breathing and of heat. Life cannot be long sustained without respiration, neither can the vital forces long continue their functions when the temperature of the body is very greatly lowered. When respiration is suspended, the greatest source of production of heat is cut off, so that the patient may die from the depressing influence of cold, although respiration might be fully restored by the use of proper means. The restoration of breathing must of course be considered as the first essential; but attention should be given to the restoration of heat with almost equal promptness and thoroughness. The following rules for the treatment of the drowned were prepared by the committee on accidents of the State Board of Health of Michigan, for general circulation. They are so concise, and the measures of treatment recommended so efficient, that we are glad to quote them without modification, as follows:—

"RULE 1.—*Remove all Obstructions to Breathing.* Instantly loosen or cut apart all neck and waist bands; turn the patient on his face, with the head down hill; stand astride the hips with your face toward his head, and, locking your fingers together under his belly, raise the body as high as you can without lifting the forehead off the ground (Fig. 381), and give the body a smart jerk to remove the mucus from the throat and water from the windpipe; hold the body suspended long

enough to slowly count *one, two, three, four, five*, repeating the jerk more gently two or three times.

"RULE 2.—Place the patient face downward, and maintaining all the while your position astride the body, grasp the points of the shoul-

Fig. 381.

ders by the clothing, or if the body is naked, thrust your fingers into the armpits, clasping your thumbs over the points of the shoulders, and *raise the chest as high as you can* (Fig. 382) without lifting the head

Fig. 382.

quite off the ground, and hold it long enough to *slowly* count *one, two, three*. Replace him on the ground, with his forehead on his flexed arm, the neck straightened out, and the mouth and nose free. Place your el-

Henbane

Sheep Laurel

PLATE XXI.—*POISONOUS PLANTS*

bows against your knees, and your hands upon the sides of his chest (Fig 383) *over the lower ribs, and press downward and inward with increasing force* long enough to slowly count *one, two*. Then suddenly let go, grasp the shoulders as before and raise the chest (Fig. 382); then press upon the ribs, etc. (Fig. 383). These alternate movements should be repeated ten to fifteen times a minute for an hour at least, unless breathing is restored sooner. Use the same regularity as in natural breathing.

"RULE 3.—After breathing has commenced, *restore the animal heat.* Wrap him in warm blankets, apply bottles of hot water, hot bricks, or anything to restore heat. *Warm the head nearly as fast as the body, lest convulsions come on.* Rubbing the body with warm cloths or the hand, and slapping the fleshy parts, may assist to restore warmth, and

FIG. 383.

the breathing also. If the patient can *surely* swallow, give hot coffee, tea, milk, or a little hot sling. Give spirits sparingly, lest they produce depression. Place the patient in a warm bed, and give him plenty of fresh air; keep him quiet.

"*Avoid delay. A moment* may turn the scale for life or death. Dry ground, shelter, warmth, stimulants, etc., at this moment are nothing,—*artificial breathing is everything,*—is the *one remedy,*—all others are secondary.

"*Do not stop to remove wet clothing before efforts are made to restore breathing.* Precious time is wasted, and the patient may be fatally chilled by exposure of the naked body, even in summer. Give all your attention and effort to restore breathing by forcing air into, and out of, the lungs. If the breathing has just ceased, a smart slap on the face, or a vigorous twist of the hair will sometimes start it again, and may be

tried incidentally, as may, also, pressing the finger upon the root of the tongue.

"Before natural breathing is fully restored, do not let the patient lie on his back unless some person holds the tongue forward. The tongue by falling back may close the windpipe and cause fatal choking.

"If several persons are present, one may hold the head steady, keeping the neck nearly straight; others may remove wet clothing, replacing at once clothing which is dry and warm; they may also chafe the limbs, and thus promote the circulation.

"*Prevent friends from crowding around the patient and excluding fresh air;* also from trying to give stimulants before the patient can swallow. The first causes suffocation; the second, fatal choking.

Fig. 384.

"*Do not give up too soon.* You are working for life. Any time within two hours you may be on the very threshold of success without there being any sign of it."

Figs. 384 and 385 illustrate the method employed by the U. S. Life-Saving Service. The patient upon being taken from the water "is turned upon his face, a large bundle of tightly rolled clothing is placed beneath the stomach, and the operator presses heavily upon his back over the bundle for half a minute, or as long as fluid flows freely from his mouth. Fig. 384

"The mouth and throat are then cleared of mucus by introducing into the throat the end of a handkerchief wrapped closely around the

forefinger; the patient is turned upon his back, under which the roll of clothing is placed so as to raise the pit of the stomach above the level of any other part of the body. If an assistant is present, he holds the tip of the patient's tongue, with a piece of dry cloth, out of one corner of the mouth, which prevents the tongue from falling back and choking the entrance to the windpipe, and with his other hand grasps the patient's wrists and keeps the arms stretched back over the head which increases the prominence of the ribs, and tends to enlarge the chest. The operator then kneels astride the patient's hips and presses both hands below the pit of the stomach, with the balls of the thumb resting on each side of it and the fingers between the short ribs, so as to get a good grasp of the waist. Fig. 385. He then throws his weight forward on his hands, squeezing the waist between them with a strong

Fig. 385.

pressure, while he counts slowly *one, two, three,* and, with a final push, lets go, which springs him back to his first kneeling position."

Sylvester's Method.—After clearing the mouth of dirt and saliva, and drawing the tongue forward, the patient is laid upon the back with the shoulders and head slightly raised. The operator then kneels behind his head, grasps the arms just above the elbows, and draws them steadily upward until they meet above the head. By this means, the ribs are elevated, and inspiration is produced. The arms are then brought down to the sides of the chest, the ribs being compressed against the chest, so as to produce expiration. These movements are to be repeated twelve to sixteen times a minute.

The application of electricity, and the use of alternate hot and cold applications to the spine, are of service in cases in which they can be used efficiently; but they should not be allowed to interfere with artificial respiration, which is the most important of all measures. In suffoca-

tion, choking, strangling, hanging, and whenever respiration is suspended by any cause whatever, the methods of artificial respiration described should be employed. In case of suspended respiration from the use of chloroform or any anæsthetic, the head should be placed lower than other parts of the body, so as to favor the circulation of the blood in the brain. In fact, standing the patient upon the head, is of almost as much importance as artificial respiration.

Lightning-Stroke.—Suspended respiration in consequence of lightning-stroke, also calls for the application of artificial respiration. Any one of the methods above described may be employed. Burns, fractures of the bones, paralysis, and various other injuries which result by injury from lightning, should be treated as when produced by other causes.

Freezing.—Parts which have been frozen should not be thawed too quickly, as more harm will be done by the rapid thawing than by the freezing. If a person has been exposed to the cold so long that considerable portions of the body are frozen, he should be carefully kept away from the fire or a very warm room, being first brought into a room of quite low temperature, where the frozen parts should be rubbed with melted snow, or very cold water, until they become pliable. The temperature of the room should be gradually raised, as the parts are thawed. Sometimes it is necessary to continue rubbing for several hours before the interrupted circulation is restored. After this has been accomplished, the parts should be anointed with sweet oil or vaseline. By this course, much of the injury which generally results from freezing may be avoided.

If ulceration takes place, the sore should be treated as directed for burns.

If a person finds himself in danger of freezing, through exposure in the open country in very cold weather, he should resolutely resist the drowsiness which will come over him and keep moving until the last. If a piercing wind is blowing, he should take shelter in some hollow in which there may be an accumulation of snow. The snow itself is not a bad protector from the cold, so that a person would be much safer if buried in a snow-bank than when exposed to the wind.

Clothes on Fire.—A little presence of mind at the moment when clothing takes fire, will generally prevent the frightful burns, often followed by fatal consequences, which occur by the clothing taking fire.

On the occurrence of this accident, from whatever cause, the individual should at once envelop himself in a blanket, cloak, shawl, carpet, rug, or any other article by means of which the flames may be smothered. Fire cannot burn without air. By depriving the fire of oxygen, the flames may be speedily extinguished. Fig. 386 illustrates the application of this method to a child.

Swallowing Foreign Bodies.—Small coins, buttons, and other round objects, generally create no very great disturbance if they reach the stomach, as they usually do. Much unnecessary alarm is often felt when articles of this kind have been swallowed. It is well to remember, in these cases, the ingenious remark of an eminent physician, to a mother who was much troubled because her son had swallowed a

Fig. 386.

quarter. He assured her that she need have no fears if she was sure the quarter was a good one, for good quarters would always pass. Pins and needles swallowed often find their way to the surface of the body after working through the tissues, sometimes for months and even years. Angular bodies sometimes do considerable harm, not only during the act of swallowing, by laceration of the gullet, but after reaching the stomach, in passing through this organ to the intestines. In order to obviate, as much as possible, the danger of injury from objects swallowed, the patient should be directed to eat freely of rather coarse vegetables, so as to distend the stomach and bowels.

Choking.—Sometimes portions of food, or foreign bodies of various sorts, become lodged in the throat in such a way as to produce interference with respiration by choking. The head should be held low, and an effort should be made to remove the obstruction with the finger. The advice "to go down on all fours and cough" is excellent. The plan usually followed by mothers in case of choking in children,

holding the head down, and striking the back vigorously, is a good one Pressing upon the Adam's apple, will sometimes cause an obstruction to be expelled. When a body becomes lodged in the gullet, much difficulty is sometimes experienced in dislodging it. It is sometimes necessary to pass an instrument down the throat for the purpose. What is known as the bristle probang, shown in Fig. 387, is the best instrument for this purpose.

Very small fish-bones can usually be dislodged from the throat by swallowing some rather hard food, as crackers or a crust of bread coarsely chewed; but when larger bones are caught in the throat no attempt should be made to push them down, as is often done. They should be removed from above by a surgeon.

Dirt in the Eye.—Dirt on the eye would be a more proper expression, as foreign bodies lodged upon the surface of the eyeball, or

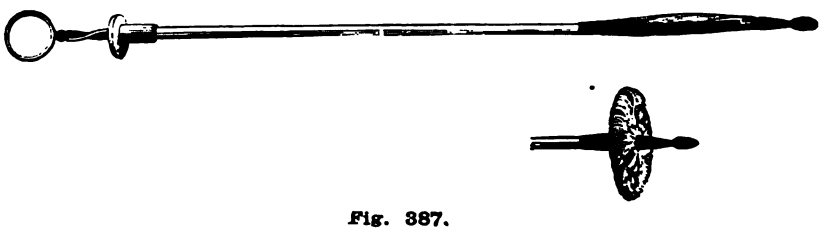


Fig. 387.

beneath the lids, are not really in the eye, but upon it. Although they sometimes cause serious mischief, as well as much pain and inconvenience, they are by no means so dangerous as foreign bodies lodged in the eye, or within the eyeball. Particles of sand, dust, or other substances in the eye, may be very easily removed by the corner of a handkerchief, or by drawing the upper lid away from the eye, and gently stroking over it in a downward direction. Violent blowing of the nose, with the eyes tightly shut, will often suffice to remove particles which are not imbedded in the mucous membrane. Little bodies known as eye-stones, obtained from certain mollusks, have no specific virtue, although they are often used for the purpose of removing dirt from the eye. Flaxseed is often employed for the same purpose. The way in which these objects operate is by producing a profuse flow of tears, which carries away the obstruction. They are not to be recommended. When particles of iron, cinders, or other foreign substances are imbedded in the mucous membrane, some blunt instrument may

generally suffice to effect a removal, unless the cornea is the part involved. When the part is imbedded in the cornea, care should be used in attempting to dislodge it, that it is not pushed farther into the tissues. Such particles may generally be dislodged in the following manner. Let the patient hold the eye perfectly still, while the operator passes back and forth before the cornea, and over the object, a knife with a sharp smooth blade, gradually approaching nearer to the surface, until finally the foreign body is removed. When this is skillfully done, the eye may not be detached at all, as the foreign body generally protrudes a little above the membrane. If the particle is imbedded in the eye so deeply that it cannot be removed by any of the means described, a surgeon should be at once consulted, as much injury may result if the obstruction is not speedily removed.

Lime in the Eye.—The intense burning of lime, or other caustics in the eye, is speedily relieved by the application of a little diluted vinegar, or lemon juice. The eye should also be thoroughly washed. Water should be first applied, as it is generally most convenient. A solution of sugar is also recommended for neutralizing lime, as it combines with it to form a saccharate of lime.

Foreign Bodies in the Ear.—Small objects, and sometimes insects, are frequently gotten into the ear. In some instances flies have been known to deposit their eggs in the ear, which in due time were hatched into a numerous progeny of grubs. In attempting to remove objects from the ear, great care should be taken that more harm than good is not done. By far the best of all measures for this purpose is gently syringing the ear with tepid water. The head should be bent to one side, and by means of the fountain syringe elevated to a sufficient height to give a moderate force, a stream of water should be directed into the ear for some minutes. In nearly every instance the foreign substance will be removed. If the foreign body is an insect, a little glycerine may be introduced into the ear with a camel's hair brush, or a feather. If these measures do not succeed, a loop of fine wire or horse-hair may often be employed with success.

Foreign Bodies in the Nose.—Foreign bodies introduced into the nose, if not crowded too far up by injudicious attempts at removal, may generally be quite readily removed by forcibly blowing the nose, the mouth and the unobstructed nostril being tightly closed. Another plan is to blow the patient's nose for him by closing the empty nostril

with the finger, and then blowing suddenly and strongly into the mouth. The glottis closes spasmodically, and the whole force of the breath goes to expel the button or bean, which commonly flies out at the first effort. This plan has the great advantages of exciting no terror in children, and of being capable of being at once employed, before delay has given rise to swelling and impaction. Sometimes the obstruction can be expelled by exciting sneezing. Care should be taken to avoid crowding the object further in. A loop of wire, or blunt hook, may in some cases be successfully used. A hair-pin answers very well for this purpose. The loop end should be first employed, and if this does not answer the purpose, one of the other ends should be slightly bent in the form of a hook. A hair-pin may be used as a pair of pincers in the absence of a better instrument. If the object is not tightly imbedded, or if it is of a soluble character, it may be washed out, making the water from a syringe pass up the unobstructed nostril and out at the one containing the foreign body, or by use of the post-nasal douche.

ACCIDENTAL POISONING.

The human race is exposed to danger from poisoning on every hand. These enemies to life are not only produced in the various arts in which man is engaged, but are produced in profusion by nature under various circumstances, and often under such specious guises as to render the most constant vigilance necessary to avoid injury. The materia medica also affords a long list of poisons, many of which are the most rapidly fatal of any known. Thus man is surrounded on every hand with danger to life from either direct or indirect poisoning, in addition to all the various other causes of disease to which attention has been more specially called in previous portions of this work.

In the strictest sense, a poison is any substance, which, when received into the body, occasions morbid action or disorders of the vital functions, since anything may become a poison if taken in sufficient quantity, as a person may be made sick by overeating, even of the most wholesome food. The general usage of the term, however, confines its application to such substances as when received into the body are capable of producing death or severe illness. An antidote is some substance capable of neutralizing, or favorably modifying, the injurious effects of the poison upon the system.

Yellow Jessamine. (Gelseminum.)

May Apple, or Mandrake. (Podophyllum.)

PLATE XXII. *POISONOUS PLANTS*

General Treatment for Poisoning.—Whatever treatment is employed should be applied with the utmost promptness and thoroughness. As a general rule, the first thing to be thought of is an emetic. A teaspoonful of ground mustard, or an equal quantity of powdered alum in a goblet of warm water, generally acts with promptness. If neither alum nor mustard are at hand, a teaspoonful of salt may be taken in the same way, or tepid water alone may be employed, and if taken rapidly and in sufficient quantity, vomiting will be very likely to occur. In case it is not produced promptly, the throat should be tickled with the finger or a feather An eminent physician has recommended the following as a general antidote for poisons. It renders insoluble such poisons as zinc, arsenic, digitalis, etc., and so makes them inert. A saturated solution of sulphate of iron, two ounces; calcined magnesia, two ounces; washed animal charcoal, or bone-black, one ounce. The iron solution should be kept in one bottle, and the calcined magnesia and charcoal in another. When wanted for use, add the contents of the two bottles to a pint of water, shake thoroughly, and take from three to six tablespoonfuls.

Specific Methods of Treatment in Cases of Poisoning.—Nearly all cases of poisoning may be successfully treated by means of some one of the the following methods, the particular application of which is pointed out in the alphabetical list of poisons which follows them :—

METHOD 1.

Give the patient at once a teaspoonful of ground mustard or powdered alum in a glass of warm (not hot) water, giving afterward several glasses of warm water. If vomiting is not quickly produced, tickle the throat with the finger or with a feather. Repeat the vomiting until certain that the stomach is completely empty. If the poison is of an irritating character, give milk or white of egg after vomiting.

METHOD 2.

ALKALIES.

Give two or three tablespoonfuls of vinegar in half a glass of water, or the juice of two or three lemons, then give three or four tablespoonfuls of olive oil and a large draught of milk. Do not give emetics nor use the stomach-pump. Ammonia, a volatile alkali, when inhaled,

should be antidoted by the inhalation of the vapor of hot vinegar by means of a vapor inhaler or an ordinary tea-pot.

METHOD 3.

ACIDS.

Give a teaspoonful of baking soda in a glass of milk or water. In the absence of soda, give a teaspoonful of soft soap or an equal quantity of shaved hard soap, magnesia, or chalk. Give white of egg and plenty of milk ; but do not use emetics nor the stomach-pump.

METHOD 4.

METALLIC POISONS.

Give white of egg, either clear or stirred in a little cold water, and a mustard or alum emetic. After patient has vomited freely, give plenty of milk or white of egg, or a thin mixture of wheat flour and milk. Do not wait to get the egg if it is not convenient, but give emetic at once and egg afterward.

METHOD 5.

NARCOTIC POISONS.

Give two or three tablespoonfuls of powdered charcoal. If a supply is not ready at hand, take a coal from a wood fire, quench it, fold in a towel and crush as fine as possible with a hammer or mallet. Next apply Method 1, or excite vomiting while the charcoal is being prepared. After the patient vomits, give charcoal again freely. It will do no harm in almost any quantity. Apply ammonia to the nostrils, give strong tea or coffee, and make alternate hot and cold applications to the spine. Also apply friction to the surface, and arouse the patient by walking him about, if possible. When the respiration becomes very weak, artificial respiration should be resorted to.

METHOD 6.

COMPOUNDS OF ARSENIC.

Apply Method 1, and soon as possible give the sediment, or precipitate, obtained by adding ammonia or soda to tincture of muriate of iron. The precipitate should be thrown on a towel and rinsed with clean water two or three times. The tincture of iron can be obtained

at any drug-store, and should always be kept in the house whenever arsenic in any form is kept. It is well to give milk and white of egg freely after the patient vomits.

METHOD 7.

Apply Method 1, then give strong tea or decoction of oak-bark, or infusion of tannin.

METHOD 8.

Pour cold water on the head, make alternate hot and cold applications to the spine, and resort to artificial respiration. Hot fomentations over the heart are useful to excite this organ to increased activity when it is flagging. Artificial warmth, friction to the surface, and the inhalation of ammonia are also useful measures. In case of asphyxia from anæsthetics, the patient should be held with the head downward while artificial respiration is being practiced.

METHOD 9.

Apply Method 1 and then make cold applications to the head, hot and cold applications to the spine, and surround the patient with hot bottles or hot-water bags, or administer a hot bath or a hot blanket pack. Apply a hot fomentation over the heart. Make patient drink copiously of hot drink of some kind.

POISONS AND THEIR ANTIDOTES.

NAME OF POISON.	ANTIDOTE AND TREATMENT.
Acid, Acetic	Method 3.
Acid, Muriatic or Hydrochloric	Method 3.
Acid, Nitric	Method 3.
Acid, Sulphuric	Method 3.
Acid, Hydrocyanic or Prussic	Method 8 and inhalation of ammonia and chlorine from moist chloride of lime.
Acid, Citric	Method 3.
Acid, Oxalic	Method 3. Give also powdered chalk or plaster, sweetened lime-water, and milk.
Acid, Arsenious	Method 6.
Acid, Carbolic	Method 3.
Aconite,	Method 5.
Alcohol,	Method 5.
Aloes,	Method 1.
Alum,	Method 1.
Ammonia,	Method 2 and inhalation of steam for several hours.
Anæsthetics,	Stimulants, artificial respiration.
Antimony,	Method 7.
Arsenic and its preparations	Method 6.
Atrophia,	Method 5.
Aqua Fortis,	Method 3.
Aqua Regia,	Method 3.
Barium and its compounds,	Method 1 and Glauber's or Epsom salts.
Belladonna,	Method 5.
Bitter Almonds, essence or oil of	Method 5 and inhalation of chlorine from moist chloride of lime.
Bitter Sweet,	Method 1.
Bismuth,	Method 4.
Blue Vitriol,	Method 4.
Bromine,	Inhalation of ammonia and vapor of alcohol.
Calabar Bean,	Method 5.
Calomel,	Method 4.
Camphor,	Method 1.
Cantharides,	Method 1.
Carbolic Acid,	Method 3.
Carbonic Acid Gas,	Method 8.
Carbonic Oxide Gas,	Method 8.
Castor Oil Seeds,	Method 5.
Coal Gas,	Method 8.

NAME OF POISON.	ANTIDOTE AND TREATMENT.
Chlorine Gas,	Method 8 and inhalation of ammonia, ether or alcohol, and steam.
Caustics (See Acids and Alkalies),	
Chloral,	Method 5. Artificial respiration with head down.
Chloroform,	Method 5. Artificial respiration with head down.
Chloride of Iron,	Method 1, magnesia, plenty of tea.
Chromium,	Method 1, magnesia or chalk in milk, white of egg.
Cocculus Indicus,	Method 5.
Colchicum,	Method 5.
Copper and its compounds,	Method 4.
Copperas,	Method 1, magnesia, large drafts of tea.
Corrosive Sublimate,	Method 4.
Cotton Root,	Method 1.
Creosote,	Method 3.
Cream of Tartar,	Method 1.
Croton Oil,	Warm-water emetic, milk, and white of eggs.
Cyanide of Potash,	Method 8 and inhalation of ammonia and of chlorine from moist chloride of lime.
Deadly Nightshade,	Method 5.
Digitalis,	Method 5 with fomentations over the heart.
Elaterium,	Method 1.
Ergot,	Method 1.
Ether,	Method 6 with the head down.
Fungi,	Method 9.
Fool's-Parsley	Method 9.
Fox-glove,	Method 5.
Gases, poisonous	Method 8.
Gamboge,	Method 1.
Garden Nightshade,	Method 5.
Gelsemium,	Method 5.
Green, Paris,	Method 6.
Green Vitriol,	Method 1, magnesia and copious drafts of tea.
Hartshorn,	Method 2.
Hellebore,	Method 5.
Hemlock,	Method 5.
Henbane,	Method 5.

NAME OF POISON.	ANTIDOTE AND TREATMENT.
Hydrochloric Acid, ...	Method 8.
Hydrocyanic Acid,.....	Method 8 (See Cyanide of Potash)
Hyoscyamus, ...	Method 5
Indigo, ...	Method 1 magnesia in milk.
Iodine, ...	Method 1 and starch or flour paste.
Iodide of Potash, ...	Method 1.
Iron, Chloride and Sulphate of	Method 1, magnesia and plenty of tea.
Jalap,.....	Method 1.
Laudanum, ...	Method 5.
Lead and its comp'nds,	Method 4 and Glauber's or Epsom salts in tablespoonful doses in milk.
Litharge, ...	Method 4 and Glauber's or Epsom salts in tablespoonful doses in milk.
Lime,.....	Method 8, large doses of sugar.
Lobelia, Ind'n Tobacco,	Method 9.
Lunar Caustic,.....	Method 4.
Mercury, its comp'nds,	Method 4.
Monk's-hood, ...	Method 5.
Morphia, ...	Method 5.
Muriatic Acid,.....	Method 8.
Mushrooms, ...	Method 9.
Narcotics, ...	Method 5.
Nicotine, ...	Method 9.
Nightshade.	Method 5.
Nitrate of Silver,.....	Method 4.
Nitrate of Potash, ...	Method 1.
Nitrate of Mercury,....	Method 4.
Nitre, ...	Method 1.
Nitric Acid,.....	Method 8.
Nitro-Benzol, ...	Method 9.
Nitrous-Oxide Gas,....	Method 8.
Nitro-Muriatic Acid,...	Method 8.
Nux Vomica, ...	Methods 1 and 8. Inhalation of chloroform.
Oil, Pennyroyal	Method 1.
Oil, Savine.....	Method 9.
Oil, Tansy	Method 9.
Oil, Vitriol	Method 8.
Oleander,.....	Method 9.
Opium and its comp'ds,	Method 5.
Oxalic Acid, ...	Give pulverized plaster or chalk, or sweetened lime-water, and milk.
Paris Green,.....	Method 6.
Peach-pits, ...	Method 9.
Pearlash, ...	Method 2.
Potato Balls, ...	Method 9.
Potato Sprouts, ...	Method 9.
Phosphorus, ...	Method 1 and skim-milk. Do not give oil.
Poke, ...	Method 5.
Potash, ...	Method 2.
Potash, Bitartrate of..	Method 1
Potash, Bichromate of	Method 4. Also give chalk or magnesia.
Potash, Cyanide of.....	Method 8 (See Cyanide of Potash).
Potash, Nitrate of	Method 1.
Potash, Sulphate of....	Method 1.
Prussic Acid, ...	Method 8. Inhale ammonia and chlorine from moist chloride of lime.
Pulsatilla, ...	Method 5.
Quicklime, ...	Method 2.
Rhubarb, ...	Method 1.
Red Precipitate,.....	Method 4.
Savine, ...	Method 9.
Silver, Nitrate of	Method 4.
Soothing Syrups, ...	Method 5.
Soda, Caustic.....	Method 2.
Spigelia, ...	Method 5.
Stramonium, ...	Method 5.
Strychnia, ...	Methods 1 and 8, inhalation of chloroform.
Sugar of Lead,.....	Method 4, Glauber's or Epsom salts in tablespoonful doses in milk.
Sulphate of Copper,....	Method 4.
Sulphate of Iron,.....	Method 1, magnesia and tea.
Sulphate of Zinc, ...	Warm-water emetic, plenty of milk.
Sulphureted Hydrogen,	Method 8.
Sulphuric Acid, ...	Method 8.
Sulphurous Acid Gas,	Method 8.
Tartaric Acid, ...	Method 8.
Tartar Emetic, ...	Method 7.
Thorn-apple, ...	Method 5.
Tin, compounds of. ...	Method 1.
Toadstools, ...	Method 9.
Tobacco,...	Method 9.
Veratrum, ...	Method 7.
Verdigris, ...	Method 4.
Vermilion,..	Method 4.
White Lead, ...	Method 4. Glauber's or Epsom's salts in tablespoonful doses in milk.
Water Hemlock, ...	Method 5.
White Vitriol, ...	Warm water emetic, milk.
White Precipitate, ...	Method 4.
Wolf's-bane,.....	Method 5.
Yew, ...	Method 9.
Zinc, Chloride of	Method 1.

SURGERY.

ABSCESS.

Suppuration, or the formation of pus, is one of the results of inflammation. Pus, or matter, is generally supposed to be composed of foul elements from the blood; but it has been shown by careful microscopical examination that pure pus is chiefly made up of corpuscles or globules, so closely resembling the white globules of the blood as to be almost indistinguishable from them. There is some discussion among pathologists as to the source of these corpuscles, some claiming that they are really white blood corpuscles which have left the blood-vessels, while others claim that they are formed in the tissues where the pus is produced. Recent investigations on the subject seem to show that both views are in a measure correct, both the blood and the tissues contributing to the formation of pus.

Pus may be formed upon an open surface, as in the suppuration of a wound, or it may be confined in a cavity in the tissues. The accumulation of pus in the tissues is termed an *abscess*. When such an accumulation is the result of acute inflammation, it is termed an acute abscess. The occurrence of suppuration in an inflamed part is generally indicated by a marked increase of pain and fever. The pain is generally described as heavy. When the abscess is near the surface, the swelling becomes pointed, and feels soft under the finger. By degrees, the outer wall of the abscess becomes thinner, until finally the red color disappears and little blisters are seen just beneath the surface of the skin, which mark the point at which the opening is usually formed, being at first a small, round hole which is soon considerably enlarged by ulceration. In some cases abscess, or formation of pus, is indicated by a chill, or several chills in succession. This is especially the case in abscess of the liver, kidneys, and ovaries. Abscesses in internal organs are also often accompanied by profuse sweats.

Treatment.—There is a natural tendency in pus to work toward the surface. The general system is usually protected from the absorption of pus by a wise provision of nature in surrounding the pur-

ulent matter with a wall of resistance which prevents its absorption. When an abscess occurs near the surface, it should be treated by hot fomentations or poultices, and may generally be allowed to open and discharge by the natural process unless it is so situated that an objectionable scar would result. Large abscesses should be opened freely by means of the scalpel, Fig. 388, bistoury, Fig. 389, or lancet.

Chronic abscesses are sometimes difficult to cure, on account of the discharge being kept up. In these cases, it is necessary to wash out the cavity of the abscess daily with carbolic acid lotion, ten or twenty drops to the ounce of water. In some cases, permanganate of potash, two ounces to the pint of water, and a weak solution of iodine,

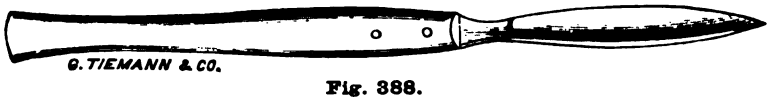


Fig. 388.

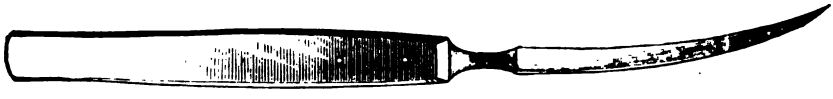


Fig. 389.

are useful. An excellent means of lessening the amount of discharge from a large abscess is to inject a saturated solution of tannin.

BOILS—FURUNCLES.

A boil originates in the death of a small portion of the skin, which generally involves a sweat, or sebaceous, gland. Inflammation is the natural process by which the portion of dead tissue is separated from the living. The boil first appears as a red and somewhat painful nodule in the skin, about the size of a bean or pea. Very soon a white point forms at the apex, swelling spreads about the center, usually attaining about the size of a dollar. At the end of four or five days, the central portion, marked by a white point, becomes loosened, and a discharge occurs consisting of a plug or core, together with matter, blood, and fragments of dead tissue. The suppuration generally ceases in three or four days.

Treatment.—Boils may often be cut short if treated early by continuous applications of ice. Dr. Eade, of London, claims to have discovered that boils and carbuncles are parasitic diseases, and that the

proper treatment is very strong carbolic acid injected into the center of the boil by means of the hypodermic syringe. The best plan to be recommended for general employment is the early application of hot fomentations, by which the pain may be relieved and the natural process hastened. When there is a great deal of general irritability, warm full baths are very advantageous.

If the boil does not open promptly, it should be freely lanced, after suppuration has taken place, as shown by softening. Warm poultices should be continued after lancing. *Blind boils* should be lanced and poulticed. The practice of squeezing boils is a very injurious one, as the matter is thereby dispersed into the surrounding tissues, often producing a numerous crop of boils in the vicinity of the first one. The discharge of matter should be secured by a large opening and gentle pressure.

CARBUNCLES.

The carbuncle is a sort of compound boil, the several centers of suppuration being joined together. Carbuncles differ from boils, however, in the fact that they have a marked tendency to spread, and generally involve much more of the deeper portions of the connective tissue. Malignant pustule is a bad form of carbuncle communicated to man by infection from animals suffering with *murrain* or *charbon*. This form is quite often fatal. It may be contracted by handling the flesh or hides of animals which have died with the disease.

Treatment.—This affection may be treated after the same plan recommended for boils, but requires greater attention to the general health of the patient, as carbuncles seldom occur except when there is a very low state of the blood. An eminent Dublin physician recommends very highly the application of pressure, by means of strips of adhesive plaster applied over the carbuncle, beginning at the outer margin and covering all except two and a half inches in the center, which is left for the discharge. The strips will be loosened in a day or two, and must be renewed as the swelling decreases. A ten-grain solution of carbolic acid is a very excellent lotion for treating carbuncles after sloughing has taken place. Permanganate of potash, ten to twenty grains to the ounce, should be used when there is a fetid odor.

BED-SORES.

These are generally produced by pressure from lying too long in one position. The best treatment is the employment of preventive measures, which consist in perfect cleanliness of the parts and daily

rubbing with alcohol, a saturated solution of alum, or alum and tannin, and rubbing the parts with gycerine twice a day after washing. When the bed-sore is formed, its suppuration may be hastened, and the foul odor corrected, by sprinkling over the sore dry powdered charcoal. An excellent healing application consists of finely powdered iodoform, which should be sprinkled over the surface of the sore, lint saturated with carbolized oil, ten drops to the ounce, being afterward applied for protection. A remedy which has been very highly recommended is galvanic electricity, generated and applied by means of silver and zinc plates. The whole sore should be covered with a thin silver plate, which may be made from a silver dollar by hammering it out thin. In the immediate vicinity, upon the sound tissues, should be placed a zinc plate of about the same size, a single thickness of flannel intervening between the zinc and the skin. The cloth should be kept moistened with vinegar, by the action of which upon the zinc the electric current will be generated. Some observers claim to have seen large sores heal over in twenty-four to forty-eight hours under treatment by this method. By the use of an air cushion, Fig. 387, pressure may be taken off the affected part, and healing thus facilitated. In some cases it becomes necessary to partially suspend the patient by means of a swing.

Fig. 390.

ULCERS.

An ulcer is a wounded or raw surface which shows no tendency to heal. It generally starts from inflammation. An irritable ulcer is one which is red, sensitive, protrudes, and bleeds freely. The little red points, or granulations, are painful to the touch. A fungous ulcer is one in which the granulations are considerably elevated by exuberant growth, commonly termed proud flesh. Callous ulcers are those which have thick and hardened margins. These ulcers are generally very inactive, are quite deep, and have rounded edges and a glazed surface.

Treatment.—Irritable ulcers should be treated by the application of nitrate of silver, or of a hot iron, by means of which the irritable surface will be destroyed. They should afterward be compressed by means of strips of adhesive plaster. If this treatment cannot be em-

ployed, carbolic acid ointment and other mild ointments should be used. Sprinkling the surface with powdered iodoform will often relieve the pain of irritable ulcers. Iodoform may also be used in the form of an ointment, two to four drams to the ounce of vaseline.

Fungous Ulcers require the application of remedies for the purpose of destroying the fungous granulations. Nitrate of silver, or a hot iron, may be used for this purpose, or the parts may be washed with a decoction of oak-bark, or dusted with powdered alum. After the proud flesh has been removed, pressure should be applied by means of narrow strips of adhesive plaster.

Callous or *Inactive Ulcers* require remedies to destroy the calloused margins, and to increase the circulation. The hardened edges may be touched with solid nitrate of silver, or with a strong solution of the same. To stimulate the circulation, one of the most efficacious remedies is continuous immersion of the part in warm water. The same effect, to a considerable degree, may be obtained by the employment of the alternate hot and cold spray, two or three times a day. Hot fomentations may also be advantageously employed. The use of electricity is frequently followed by excellent results. The application may be made in the usual way, by means of sponges, or by the simple method recommended for bed-sores.

Large ulcers which are in a healthy condition for healing, large surfaces which have been deprived of the skin by accident, as burns, etc., afford a good opportunity for the employment of *skin grafting*, which consists in applying to the granulations small portions of healthy skin taken from some other parts of the body or from some other individual. The grafts of skin should be very small, and care should be taken to place them upon the raw surface with the proper side downward. After the application, the entire part should be carefully covered with gutta-percha tissue, which should be kept in place without removal for two or three days. Great care should be taken in dressing that the newly formed portions of skin are not rudely brushed away.

At the end of a week or ten days, little points of the newly forming skin may be seen making their appearance where the grafts were applied. This measure in some cases is very important, as sores so large as to be otherwise incurable may be healed by means of it. By the aid of this remarkable discovery, cases have occurred in which re-

covery has taken place when the whole scalp has been torn off by the hair becoming entangled in machinery, the new scalp being formed by the growth of hundreds of little grafts placed upon the denuded surface.

SYNOVITIS.

This affection consists in an inflammation of the synovial or lining membrane of a joint. It is indicated by enlargement of the affected joint. The disease may occur in either the acute or the chronic form.

Treatment.—In many cases, improvement of the general health by proper hygienic treatment is essential. The best remedies for chronic synovitis are rest, fomentations, alternate hot and cold applications to the joint, hot leg baths, and manipulations of the joint, with inunction. Attention should also be given to the muscles of the affected limb, which are likely to undergo wasting in these diseases. This tendency may be counteracted by the daily employment of massage and general faradization. The eminent Dr. Metzger depends almost wholly upon manipulations of the joint and limb, rubbing upon the sides of the joint about the knee-cap, and from the feet upward, so as to stimulate the circulation and promote absorption. Some form of unguent, as sweet oil, vaseline, lard, or fresh butter, should be used, so as to avoid irritation of the skin and facilitate the manipulation. The various liniments recommended for this disease owe their efficiency almost entirely to the rubbing with which they are applied. The plaster-of-Paris bandage is an excellent means of securing rest to the joint.

In cases in which there is little or no pain, the elastic bandage is very useful for promoting absorption by compression. The bandage should be applied from the foot upward, so that it may not interrupt the circulation in the lower part of the leg. Care should be taken to bend the joint daily, so as to prevent permanent stiffness. If this is done at the same time that traction is being made upon the limb, no pain will be given nor harm done. As soon as the swelling and tenderness are entirely removed, so that there remains only thickening of the tissues about the joint, the patient should be instructed to begin using the limb moderately, increasing the exercise from day to day as he can without exciting inflammation. If the swelling increases slightly by exercise, the joint should be given rest again for a few days, and then the exercise resumed.

GANGRENE.

Gangrene, or death of the tissues, is frequently a very formidable condition, and one which requires prompt and efficient treatment. The danger is not only from extension of the disease, but from absorption of the elements of the dead tissues. In order to prevent infection of the system through absorption, bathe the parts frequently in carbolic acid solution, twenty drops to the ounce, and apply a charcoal poultice. Prof. Frank Hamilton, of New York City, recommends as the most efficacious remedy for gangrene, continuous immersion of the affected part in water as hot as can be borne. When other remedies do not succeed, pure carbolic acid may be applied to the sloughing parts.

Senile Gangrene.—This is a form of gangrene which occurs in elderly persons, and after low fevers, or great loss of blood, in consequence of deficient circulation. It affects most frequently the foot, and generally appears first as a small black or purplish spot upon the inside or end of the great toe, sometimes without pain or sign of inflammation, at other times with slight redness, which gradually extends until the death of the affected parts occurs with separation from the sound tissues, or until a large portion of the body is involved, and the patient dies.

In some cases, the affected part seems to shrivel up until it resembles a piece of dried beef. In a few cases, the beginning of the disease is indicated by an unnatural white and shriveled appearance of the affected part.

If there is much inflammation, apply cool solutions of carbolic acid, a dram to the pint. If the parts are cold, and white or blue, with no evidence of inflammation, apply heat. Prolonged immersion of the affected part in hot water is an excellent remedy.

VARICOSE VEINS.

As elsewhere explained, a varicose condition of the veins is one in which they are enlarged and tortuous. The lower extremities are most often affected.

Treatment.—The difficulty may be readily relieved by the use of the elastic silk stocking, or of a rubber bandage. The best means for a radical cure is tying the affected veins at a number of points along their course, with long-continued rest to the limb in an elevated position.

ANEURISM.

This disease consists of the dilatation of a blood-vessel. It may affect arteries in any part of the body. It very frequently occurs in arteries in the interior of the body, in which case little can be done for it in the line of treatment, except what has been recommended elsewhere. See page 1055. When the affected arteries are near the surface of the body, prolonged pressure with the finger upon the artery affected, above the point at which the tumor exists, and ligation of the affected artery, are the most useful measures. A person suffering with aneurism should be prepared to act with promptness, in case of bursting in the sac. Upon the occurrence of such an accident, a pad should be applied over the point of rupture and tightly compressed with a bandage.

NÆVUS.

This abnormal growth consists of enlarged and greatly dilated capillaries. When near the surface, they are of a dark cherry color; when more deeply seated, of a steel-blue color. They often exist from birth, and hence are sometimes improperly termed mother's marks.

Treatment.—Use mild measures first, such as continuous pressure by means of a coin inclosed in a bandage, and vaccination. If these measures do not succeed, pass red-hot needles under it at several points, for the purpose of exciting inflammation. The ligature may be employed. We have obtained the most satisfactory results by the use of galvanic electricity in the form known as electrolysis.

VASCULAR GROWTHS.

These are most likely to occur near the mouth of the female urethra, where they appear as little red prominences of an exceedingly painful character, occasioning very great pain at the time of urination or soon after. We have treated many of these cases with entire success by means of galvanic electricity.

ENLARGEMENT OF THE LYMPHATIC GLANDS.

Enlargement of the lymphatic glands of the neck and armpits is generally due to scrofula. The application of plasters, tincture of iodine, and various irritants, greatly aggravate the local inflammation, and probably do no good. Dr. Hamilton says: "I have never had any evidence worthy of acceptance that these agents have in a single instance dispersed these swellings." We protest that the application of tincture of

iodine to an inflamed gland to amuse the patient until nature effects a cure, is an act of cruelty. The most proper treatment is the application of fomentations, and lancing as soon as softening occurs. Alternate hot and cold applications will sometimes cause absorption to take place, if made two or three times a day for a long time.

AMPUTATION.

Amputation is a measure sometimes necessary to preserve life from the consequences of disease or injury; but is justifiable only when it

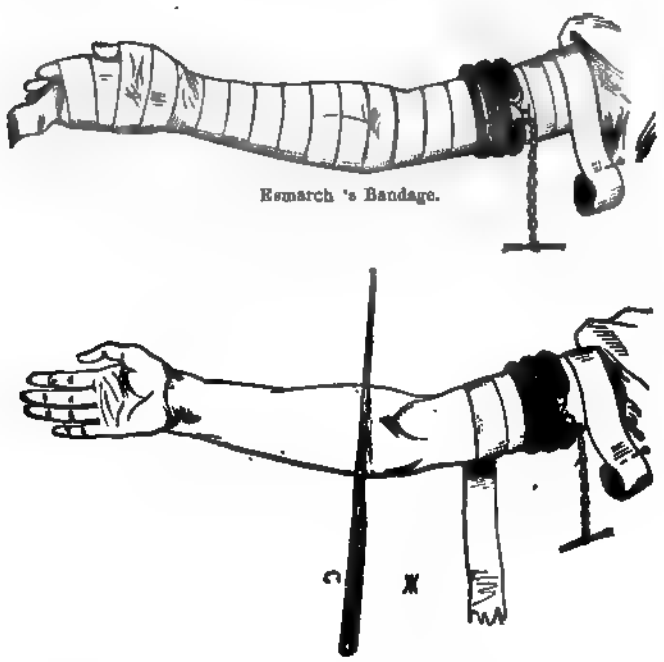


Fig. 891. Amputation of the Arm.

can be clearly settled beyond all reasonable doubt that recovery cannot take place by other means, or that the injury or inconvenience occasioned by the disease or deformity will be greater without the operation than with it. An operation of this kind must of course be left to the experienced surgeon, except in cases of emergency in which a limb has been so badly mangled by machinery or otherwise that it is held to the body by only a few shreds of tissue, which may be readily divided with a pair of scissors.

Operations of this kind were formerly among the most formidable in surgery on account of the severe pain and the great loss of blood attendant upon them; but the discovery of anæsthetics has abolished the necessity for suffering, and by the use of Esmarch's bandage (see Fig. 391), the operation is now an almost bloodless one. In amputating a leg, a short time ago, in which the anæmic condition of the patient made it important that as little blood as possible should be lost, the hemorrhage amounted to scarcely an ounce during the whole operation.

It is needless to give in a work like this directions for the performance of the various forms of amputations required in different portions of the body.

DISEASES OF THE BONES AND JOINTS.

Inflammation of Bone.—Inflammation of bone may involve simply the periosteum, when it is known as *periostitis*. It occurs most often in young persons. It is accompanied by a chill, high fever, and severe pain of the affected part. There is marked swelling, but no redness. The skin is tense, and usually pits on pressure with the finger. Every jar is painful. When suppuration occurs, the swelling increases, the skin becomes red, and the nearest joint becomes swollen and painful. After ten or twelve days, softening of the part indicates the presence of pus. Periostitis occuring at the end of the thumb or finger is termed a felon. Periostitis often involves inflammation of the bone itself, which also generally occurs in young persons, and is most often the result of injury. The symptoms are intense aching pain at the seat of inflammation, puffy swelling, with an abrupt margin which advances as the disease continues, fever, great restlessness, and, in severe cases, delirium.

It is generally difficult to distinguish between inflammation of the bone and periostitis. The treatment for both forms of inflammation is essentially the same, and consists of applications of ice at the start, with elevation of the affected part. If the disease continues, not being checked by treatment, a surgeon should be called to lance the bone.

Caries of the Bone.—This is an affection of the periosteum, or covering of the bone, which corresponds to an indolent or inactive ulcer of the skin. The tissues of the affected parts are tender and swollen, and the patient suffers with severe boring and tearing pains

at night. Improving the patient's general condition by careful diet and correct hygiene, constitute the means of treatment. Bad cases require a surgical operation for removal of dead bone.

Necrosis of Bone.—Death of bone is generally the result of inflammation. When too large a portion of the bone is not involved, and the periosteum is left intact, nature generally effects a cure by separating the dead from the healthy tissues, and supplying the place of the diseased bone with newly formed tissue. In many cases, an opening to the surface is made, through which the dead bone, gradually undergoing decomposition, is discharged. After complete separation between the dead and the healthy bone has taken place, the dead bone may be removed by a surgical operation.

Excision or Resection of Bones.—Removal of the whole or of a portion of various bones is frequently required in injuries by which their integrity has been destroyed, and after disease which has resulted in death of the bone. The object of the resection is to promote the repair of the diseased or injured part. In case of death of portions of bone, removal is only performed after the dead bone has fully separated from the new. The wise surgeon always endeavors, in the resection of bones, to leave the periosteum of the bone as nearly intact as possible, as by so doing a new formation of bone may occur.

A few years ago, we removed from the thigh of a young man who had been crippled for several years, several inches of dead bone, involving a considerable portion of the shaft of the femur which had undergone decay, or necrosis, and was separated from the healthy bone. The formation of a new bone had already begun, and progressed rapidly after the operation, so that in the course of a few months the young man pronounced his once crippled and diseased leg stronger and more vigorous than the other. We hardly think this was really the case; but the patient was led to his conclusions by the fact that the newly formed bone was larger than the other one, and he did not encounter the slightest inconvenience in its use.

Inflammation of the Joint—Acute inflammation of the joint begins with swelling, heat, and pain, but very slight fever. The joint is distended by a great increase of serum and synovia. The treatment of this form of disease is simply rest, and the application of fomentations three or four times a day, with tepid compresses the balance of the time. Recovery generally takes place quite rapidly.

Chronic inflammation of a joint may result from the acute form, or may be chronic from the start. The joint is much swollen without either heat or pain. It most commonly affects the knee. The patient can generally walk quite easily, but exercise is fatiguing and increases the swelling. This is the so-called white swelling of the knee-joint. (For treatment see "Synovitis.")

Anchylosis—Stiff Joint.—Stiffness of a joint may be either true or false. In the first condition, the mobility of the joint is destroyed by a bony union of the articulating bones. In false anchylosis, the stiffness is due to the formation of fibrous bodies between the bones of the joint, to the contraction of ligaments, muscles, or tendons, or

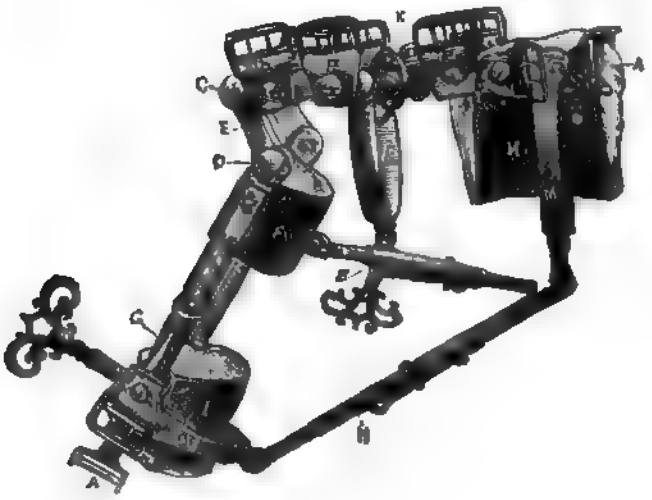


Fig. 392.

their adhesion together or to adjacent tissues, and various other causes.

Treatment—Bony anchylosis is incurable. In some cases, however, the difficulty may be greatly relieved by a surgical operation by means of which a new joint may be formed. This has been effected in the hip joint by removal of the end of the femur, or of a portion of the bone near the end, and, in case of the elbow and the knee joints, by the removal of the ends of the articulating bones. By keeping up passive motion after the operation, the ends of the bones are prevented from uniting, and thus an artificial joint is produced by a process which sometimes occurs in fractures when bones fail to unite. False

anchylosis, may in mild cases be relieved by fomentations, manipulation, and passive movements, of the stiffened joints. Sometimes considerable force is required to overcome the rigidity of the joints. Various forms of apparatus have been constructed for the purpose of applying the necessary force. One of the most efficient of these is shown in Fig. 392. Another form of apparatus for the same purpose is shown in Fig. 393.

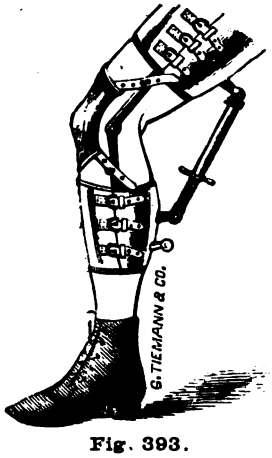


Fig. 393.

Floating Cartilage.—This is a term applied to loose and floating bodies in the joint which are sometimes of a cartilaginous nature. The presence of these bodies is indicated by sudden loss of muscular power in the limb, or inability to support the body, generally accompanied by a sharp pain. On moving the joint freely in one direction or another, the pain and disability suddenly disappear, leaving only a slight soreness. The floating body can generally be felt upon one side just below the knee-pan. Inflammation of the joint is sometimes set up by the irritation of these bodies.

Treatment.—The patient should give the affected joint rest in the horizontal position for some days, and should use the limb carefully when walking, always taking especial care to avoid such motions or positions as are likely to excite the unpleasant symptoms. Patients are sometimes much benefited by using the elastic knee-cap, or a leather splint applied to the joint. In case none of these simple measures give relief, a surgical operation for removal of the foreign body may become necessary; but an operation of this kind is accompanied by considerable risk to life, as well as danger of destroying the joint.

Hip-Joint Disease.—This is one of the most important affections of the joints, and its symptoms should be understood by all, as the disease frequently begins quite insidiously There is a difference of opinion among surgeons as to the cause of this affection, some attributing it chiefly to scrofula, while others, particularly the eminent Prof. L. A. Sayre of New York, insist that it is chiefly due to injury of some kind. The usual symptoms are, drawing up of the leg, wasting of the muscles, and pain in the region of the knee. The patient frequently cries out in the night from pain of the limb. As the disease progresses, the thigh

becomes rolled outward, the child limps as he walks, and stands with one heel raised from the ground and the toe turned out. If examined when stripped, it will be noticed that the fold beneath the buttock is higher upon the affected side than upon the opposite. As the disease advances, the limb becomes still more drawn up and the hip-joint stiff. Although for several months, at first, the patient may be able to run about freely, he now becomes able to use the limb much less, or not at

Fig. 394.

all. If he be laid upon a table, or other hard, flat surface, being stripped for the purpose, it will be noticed that the body curves upward and the affected limb is slightly bent, as may be seen in Fig. 394.

If now the affected limb be raised, as shown in Fig. 395, the curve in the back disappears. If the same thing is done with the sound limb, no change will be made in the curve of the body. If both limbs are bent

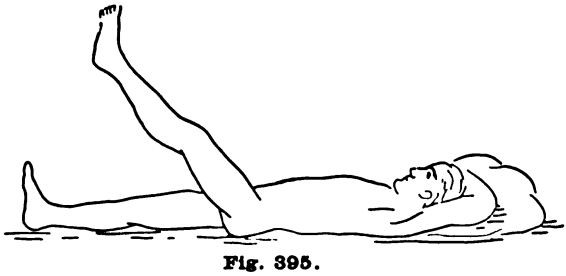


Fig. 395.

and moved from side to side, or otherwise, together, it will be seen that the pelvis, although a part of the trunk, moves with the limbs. Even when the pelvis is held firmly by an assistant, it will be found to move whenever the affected limb is moved, showing that the joint has become stiff, or that anchylosis has taken place. The buttock of the affected side will be found to be somewhat flattened on account of the filling up of the hollow observable in the sound hip. If a slight blow is made upon the sole of the foot when the limb is extended, pain will be felt.

Treatment.—The proper treatment of this disease consists in removing the pressure from the affected surfaces by extension of the limb, or

drawing the affected bone partly out of its socket. This may be done either by confining the patient in bed and attaching a weight to the leg of the affected side by means of a pulley and adhesive straps, as in cases of fracture of the thigh, Fig. 373, or by the use of an instrument known as the hip splint, Fig. 396. The splint is much to be preferred to extension by the weight and pulley, as the latter measure necessitates confinement in bed for a long time, and, in consequence, injury to the general health. The pulley should be removed at night, and alternate hot and cold applications should be made over and about the affected hip. Special attention should be given to improvement of the general health by exposure to fresh air and sunshine, by good diet, etc. The treatment of hip-joint disease should always be conducted under the care of a skill-

Fig. 396.

ful surgeon. If it is detected early, an entire cure may take place; but when the disease is considerably advanced, more or less deformity will always remain. In many cases the best that can be hoped for is recovery with a stiff joint. Shortening of the limb takes place in nearly all cases.

Caries of the Knee and Ankle Joints.—The disease usually causes but slight symptoms for several months, such as jerking of the leg, limping, pain after exercise or on pressure, more or less swelling. These symptoms gradually increase, the limb becoming flexed, and the joints finally stiffened. In the ankle joint, the disease is generally the result of chronic inflammation, which terminates in the formation of abscesses and exposure of the joint. When the knee joint is affected, a steel splint should be applied in such a way that extension of the limb may be produced by which the articulating surfaces will be drawn apart. The plaster-of-Paris bandage is the best treatment for this affection

The hot and cold spray, tepid pour, and fomentations, may also be advantageously employed in treatment.

Angular Curvature of the Spine.—This is the result of caries of the anterior portion of the body of the vertebræ, which allows the vertebræ to come nearer together in front, thus prying the spinal processes apart and producing an unnatural prominence. The disease makes its appearance the most frequently between the ages of four and twelve years. It is indicated by unnatural squareness of the shoulders, stiffness in walking, pain produced on slight jarring, slight tilting backward of the head, unnatural separation of the feet in standing, pains in the stomach or bowels, generally about the navel, and difficulty in bending the trunk in the morning. Upon examination of the spine there will be found in some part of it an unnatural prominence. When the vertebræ of the neck are affected, the head is usually thrown back, the breathing is short and irregular, and often accompanied by a slight sigh or grunt. The patient is also much troubled with hiccough. When the disease is located in the lower part of the back, pain often runs around the pelvis and down the legs. Sometimes there is contraction of some of the muscles of the thigh, in consequence of which one or both limbs may be drawn up. In this case, the patient is generally hollow-backed when standing upon the feet, the spine being turned forward.

Fig. 397.

Treatment.—The proper treatment of this affection consists in restoring the spine as nearly as possible to its natural condition, and giving it absolute rest in that position. This may be most easily accomplished by a properly adjusted splint or brace. When the disease is in the central or lower portion of the spine it may be most easily treated by means of the plaster-of-Paris jacket, a method of treatment perfected and chiefly introduced by Dr. L. A. Sayre, professor of Orthopædic

Surgery in Bellevue Hospital College, New York City. In the application of this bandage the patient is suspended by the head and shoulders by means of the harness shown in Fig. 397. The weight of the body thus acts as a force in straightening the curvature while the patient is suspended. In this way, the jacket is applied so that the condition of the spine secured during suspension is maintained, and thus the diseased surfaces are kept apart and an opportunity given for nature to effect a

Fig. 398.

Fig. 399.

cure. Of course the spine cannot be straightened all at once, and it is necessary that the suspension should be frequently practiced, so that by degrees the spine may return to its natural condition.

The wheel carriage, Fig. 398, is a very useful apparatus, by the use of which a patient suffering with disease of the spine may be able to take a considerable amount of exercise in the open air. When the vertebræ of the neck are affected, an apparatus somewhat similar to a "jury-mast" is sometimes required. Fig. 399.

Lateral Curvature of the Spine, as illustrated in Fig. 400, is very much more common than angular curvature of the spine. It occurs most often in girls between the ages of twelve and sixteen. Among the first symptoms are dull, aching pain in the back, especially between the shoulder-blades, a tendency to stoop, lassitude, and general weakness. One shoulder will be observed to be a little lower than the other. Upon a careful examination of the spine it will be found to be curved to one side

Fig. 400.

Treatment.—Since this disease arises largely through weakness and irregular action of the muscles of the back, it is necessary in treatment not only that the curves should be corrected by proper splints, or braces, but that the weakened muscles should be strengthened. In its early stages, the disease can generally be corrected by means of proper exercises, such as, swinging by the hands several minutes at a time and several times a day, climbing a ladder hand over hand, exercising with the trapeze, etc. When further advanced, other means become necessary, one of the most efficient of which is the spinal swing, Fig. 401, and the use of proper splints and braces. The plaster-of-Paris jacket is recommended by Prof. Sayre for these cases, and we have employed it in connection with the spinal swing with success in several bad cases. The apparatus shown in Fig. 402, may be sometimes usefully employed in these cases.

Fig. 401.

Hysterical Joints.—Cases of hysteria are occasionally met with in which the principal symptoms are found in the joints, the hip being most likely to be affected. The patient complains of great pain, tenderness and stiffness of the joints,

yet there is no swelling or any other indications of inflammation.

Treatment.—The treatment of this affection consists in the removal of the cause of the nervous disorder of which it is a symptom. Improvement of the general health, and especially the removal of any existing local disease, particularly disorders of the womb in women, is of first importance. Alternate hot and cold applications, and the employment of galvanism, are the best local measures to employ. The patient should be encouraged to make efforts to use the affected limb as much as possible. In some cases, the splint may be used to advantage.

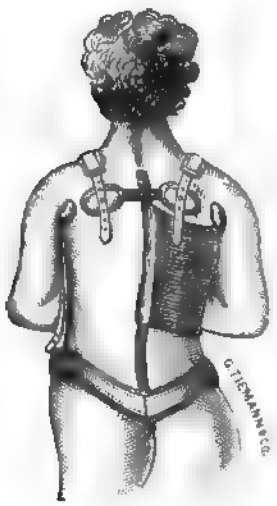


Fig. 403.

Ganglion—Weeping Sinew.—This is an enlargement upon the sheath of a tendon, containing serum or synovia, most frequently found upon the back or the front of the wrist, or upon the top of the foot. An enlargement of this sort most often originates from blows or strains, and hence is most likely to occur in mechanics, gymnasts, laborers, and those who are accustomed to lifting heavy weights. We have seen it in young ladies, in whom it seemed to have been brought on by piano-playing. The enlargements vary in size from that of a pea, to a small hen's egg. The contents consist of a colorless fluid resembling the white of an egg.

Treatment.—Weeping sinew sometimes disappears of itself, but in such cases usually returns. A cure may sometimes be effected by pressure by means of an elastic bandage. The most common method of treatment is rupture of the sac by a blow with a flat stick, or the back of a book. The affected part should be given complete rest after an operation of this sort, and a bandage should be worn about the seat of the disease for some time, so as to prevent the sac from refilling.

House-Maid's Knee.—This is a difficulty similar to weeping sinew, consisting of an enlargement of the bursa or sac found between the knee-cap and the skin covering it. Fig. 403. It derives its name from the fact that it occurs very frequently in persons who are accustomed to kneel in the work of scrubbing floors, etc. Weavers are subject to similar enlargements upon the buttocks. Persons engaged in

other occupations suffer with similar difficulties in other parts of the body.

Treatment.—If treated at once upon its first occurrence, this difficulty may generally be cured quite promptly by rest, the application of ice, or the alternate hot and cold spray or pour, and bandaging with flannel or rubber bandage. A cold decoction of oak-bark may also be advantageously employed.

Inflammation of Tendons.—Tendons and their sheaths often become inflamed in consequence of sprains and other injuries. In addition to the local pain, the patient suffers with fever, which is introduced by a chill. When the chills are repeated, there is much danger.

Treatment.—Rest and the application of cold are the most efficient measures. If there is much pain, hot fomentations, or hot packs applied to the whole limb affected, are very efficient. The limbs should also be elevated.

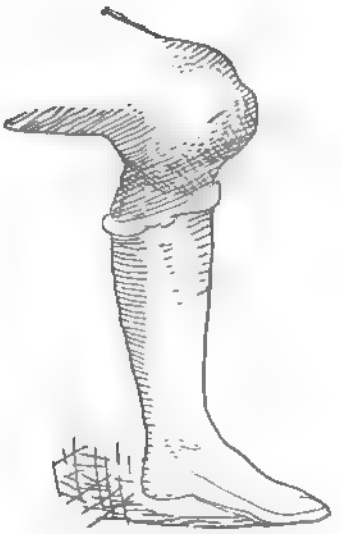


Fig. 403.

Contraction of Tendons, Muscles, etc.—A muscle always contracts during inflammation, and hence in inflammation of the muscles, care should be taken to keep the inflamed muscle extended, and thus prevent contraction. The contraction of tendons is also the result of inflammation or long-continued pressure. The membrane, or fascia, beneath the skin also frequently contracts in consequence of inflammation. Various forms of contraction and deformity often result, which are only relieved by division of the contracted parts. The division should generally be made by a small knife introduced beneath the skin so that an open wound is not made. Sometimes quite a number of incisions are necessary. When small tendons are divided, the extension of the contracted parts should be gradual. In case of large tendons, the parts may be at once forcibly restored to a proper condition and held there by means of splints and bandages. The division of tendons is known as tenotomy.

Contracted muscles also often require division in the same way. Contractions of the skin frequently occur in consequence of deep burns.

This should be prevented as far as possible by holding the parts in proper position and resisting the tendency to contraction. Contractions of of this sort generally soften and become more elastic after a few months. In some cases it is necessary for a surgeon to dissect out the contracted bands, supplying their place with healthy skin from the adjacent parts.

DISEASES OF THE HANDS AND FEET.

A large share of the diseases of these organs result from neglect or abuse. The hands are frequently injured by the use of irritating substances and by exposure to cold while wet or moist. The feet generally suffer most from neglect of proper cleanliness and improper or insufficient covering. Both hands and feet frequently become sources of great discomfort and annoyance for want of proper attention. In cold weather, persons whose hands are liable to chap should avoid the use of soap altogether, cleansing the hands by washing with corn meal or oatmeal and water. The application of glycerine or vaseline after washing is a very excellent means of preventing chapping. The hands may generally be protected from irritating substances by anointing with oil or vaseline before exposure. Cracking the fingers is a bad habit, as it causes enlargement of the joints. Biting the finger-nails is not only disagreeable, but injurious, and is the principal cause of hang-nails of the fingers. The habit when once acquired, is often difficult to break. It may often be accomplished, however, by smearing the ends of the fingers and nails with some bitter or otherwise disagreeable substance, as extract of aloes or tincture of red pepper.

Ag-Nails.—In some persons, the thin layer of skin at the root of the nail has a tendency to adhere to it as the nail grows out. After a time it becomes loosened, and peeling back forms a ragged fringe at the root of the nail, the fissures of which are likely to run down into the skin, thus often becoming very annoying. The best way to prevent this annoying difficulty is to gently press back the portion of skin referred to, every few days, after soaking the hands in warm water, thus preventing it from adhering to the nail.

Hang-Nail of the Finger.—This is a little portion of partially detached tissue adjacent to the nail, which is usually the result of a

slight injury of some kind, and by constant contact with various objects becomes inflamed and quite annoying.

Treatment.—Clean the nail carefully, dry with a bit of absorbent cotton or soft cloth, and apply an adhesive plaster. It should be renewed every day or two until the cure is completed. If a considerable degree of inflammation has been excited, and there is a raw surface of considerable size, a little powdered alum or tannin should be applied before the application of the plaster.

Run around—Onychia.—This is an inflammation of the matrix of the nail, which results in ulceration of the soft tissues about the nail. It sometimes results from injury. It is more often due to an unhealthy state of the system. The nail gradually becomes loosened, its edges and root roughened and raised up. In the malignant form of the disease, the end of the finger becomes greatly enlarged and bulbous, the nail becomes loosened, and when long-continued, the bone may be enlarged.

Treatment.—The affected part should be thoroughly cleansed and then touched daily with a strong solution of alum or of sulphate of zinc. In severe and obstinate cases, a little powdered alum may be applied to the inflamed tissues with advantage. In very bad cases, the removal of the nail becomes necessary. Special attention should be given to the improvement of the general health by hygienic measures.

Claw-like Nails—Sometimes through perverted nutrition of the nail, they assume the form of claws. The only treatment is removal of the nail and its matrix.

Felon, or Whitlow.—The most common seat of this affection is the palmar surface or ends of the fingers. The difficulty generally results from some injury. The symptoms are: throbbing pain, with tenderness, and hard swelling of the affected part. The skin upon the back side of the finger, particularly around the nail, becomes red and irritated. There are several varieties of felons, some originating in or beneath the tissues of the skin, and others in the periosteum or covering of the bone. The latter variety is the most serious, and sometimes results in destruction of the bone.

Treatment.—As soon as the difficulty is discovered, the hand should be given entire rest and should be carried in a sling, or held in such a position as to diminish the circulation in the limb. The diseased finger should be soaked in water as hot as can be borne. Some

recommend that the finger should be soaked in hot lye. In case the latter remedy is employed, great care should be taken, as we have seen injury to the finger occasioned which was really quite as severe as that which was likely to result from the felon itself, by the injudicious employment of this measure. In some cases, cold gives the most relief; but it is necessary to immerse not only the affected finger, but the whole hand, and as large a portion of the arm as possible. If these measures do not succeed in checking the progress of the disease, the finger should be lanced as early as possible, a free incision being made to the bone. The incision should generally be made by the side of the finger, so that injury may not be done to the tendons. After lancing, a poultice should be applied

Warts are due to excessive growth of the papillæ of the skin. They occur most frequently upon the hands of young persons. They are occasionally seen upon the face. The idea that warts are contagious has little foundation. Warts of the face are likely to degenerate into cancers.

Treatment.—After thoroughly oiling the skin about the wart, touch it with the end of a stick dipped in nitric acid. Acetic acid may also be used for the same purpose. The application should be repeated every few days until the wart is destroyed. Warts sometimes disappear very suddenly, which has given rise to the idea that they may be driven off by various maneuvers supposed to possess the power of dispersing warts in a magical manner. It is possible that in these cases the imagination may be instrumental in effecting a cure.

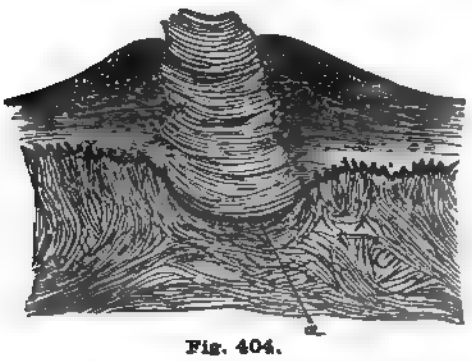


Fig. 404.

Corns.—A corn is a callus produced upon the toes by pressure, or friction. Although there are many different varieties of corns, they are generally classified as soft and hard. Soft corns are generally situated between the toes, and arise from pressure of the toes together. The moisture of the skin which is confined by the contact of the toes,

keeps the callus from becoming hard, as would be the case in other situations.

Hard corns are much more common, and are found upon the prominent parts of the toes. Hard corns are generally made up of a number of layers of thickened epidermis, as shown in Fig. 404. When neglected, they may become the source of much pain and inconvenience. The pair is generally of a burning, lancinating character.

Treatment.—The treatment is very simple, but needs to be applied with great perseverance. Soak the feet in hot water once or twice a day, then apply to the center of the corn a little acetic acid with the end of a pine stick. By this means, the hardened skin will be softened, and it may be easily scraped away with a dull knife, or rubbed down with a piece of fine sand-paper or pumice-stone. Prof. Syme, a noted Scotch surgeon, also recommends, in addition to these measures, the application of nitrate of silver over the center of the spot from which the corn has been removed, as a means of preventing its return. When the corn is very hard, it should be covered with a compress wet in a strong solution of soda or saleratus, which should be kept on every night.

In order to prevent its return after removal, the part must be protected from pressure. The best means of doing this is to cover the toe with a piece of soft buckskin saturated with oil, having an opening cut in it the size of the corn so as to bring the pressure upon the surrounding parts and relieve the diseased portion of skin. This is especially useful in cases in which the tissues have become very sensitive from long pressure. The operation performed by corn doctors for the removal of these troublesome callosities is seldom effective, as the corn is always sure to return. Almost any one can perform the same operation after softening the corn in the manner directed, by seizing the center of the corn with a proper pair of pincers and working carefully between the hard tissues composing the corn and the healthy skin, with a penknife. In applying strong acetic acid or nitrate of silver to corns, care should be taken not to encroach upon the sound skin, and it is a good plan to oil the skin about the corn before making the application, as a means of protection.

Soft corns should be treated by means of astringent applications, as a strong solution of tannin in water or glycerine, a decoction of oak-bark, or a mixture of equal parts of powdered alum and white of egg. It is also important to separate the toes by placing between them a little wad of cotton or lint.

Bunions.—A bunion is an enlargement of a bursa of the foot. It is similar to the affection elsewhere described as a house-maid's knee, the principal difference being that in this case the bursa beneath the great toe is most likely to be affected. The little toe sometimes suffers in the same way. Bunions are also caused by wearing illy fitting shoes, especially narrow toed shoes. Fig. 405 illustrates a foot badly distorted by an improperly fitting shoe, having a large bunion upon the first joint of the great toe.

Fig. 405.

Treatment.—The treatment consists in the wearing of shoes which afford plenty of room for the toes, softening of the thickened skin by alkaline washes, and protection from pressure by the same means as suggested for corns. When the toe is very much distorted, it may be drawn into position by means of narrow adhesive strips. A very efficient way of straightening the deformed toe is to place upon it a cot, or some soft material, the free end of which should be attached by means of a strong rubber ribbon to a strip of adhesive plaster applied around the heel, and extending along the side of the foot. In some cases several strips of adhesive plaster are necessary. Fig. 406 illustrates an apparatus which has been constructed for use in these cases.

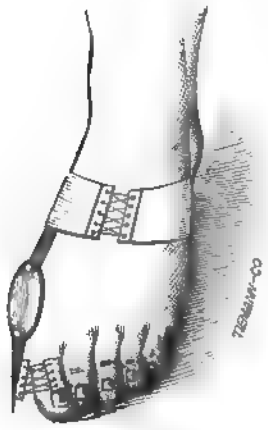


Fig. 406.

Stone Bruises.—This is an affection of the balls of the toes due to slight bruising. Stone bruises most often occur in children who go barefooted. They are characterized by pain, tenderness, and some swelling.

Treatment.—The best treatment is the hot foot bath, or a hot pour or fomentation applied to the bottom of the foot. The last-named remedies are preferable when they can be applied thoroughly, as they enable the foot to be kept in an elevated position.

Cracks or Fissures Between the Toes.—These are sometimes very annoying. They generally arise from neglect to cleanse the feet thoroughly, allowing accumulation of acrid perspiration. They heal

readily if the feet are kept properly cleansed. The pain and irritation can be easily relieved by separating the toes by means of a piece of lint or soft cotton, saturated with glycerine or carbolated vaseline. The feet should be bathed a few times with a strong solution of alum, or a decoction of oak-bark should be applied between the toes once a day for a week or two.

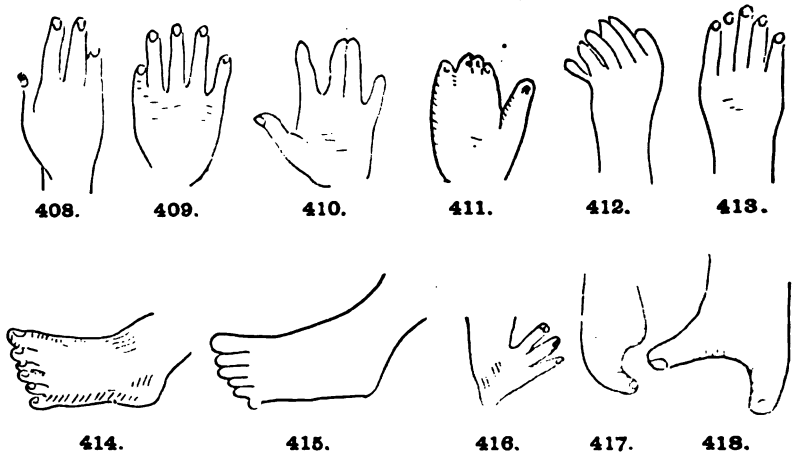
Ingrowing Toe-Nails.—This difficulty generally affects the outer side of the great toe. It is generally produced by wearing narrow-toed shoes or boots, and trimming the nails too closely at the corners. In consequence of the pressure of the shoe, the edge of the nail is forced down into the flesh, producing much pain and irritation, especially in walking. Cutting away the edge of the nail does no good, as it will soon grow out and the difficulty will be aggravated. When the irritation is extreme and kept up for a long time, inflammation and even ulceration may occur.

Fig. 407.

Treatment.—When there is much soreness or inflammation, soak the feet in water as hot as can be borne two or three times a day, and apply cool compresses the rest of the time, giving the feet entire rest. When the inflammation is considerable, subdue it in this way: The center of the nail should be scraped very thin, a notch should be cut in the center at the end, and the edge should be raised by carefully drawing under it threads of floss silk. An ingenious little instrument, Fig. 407, has recently been devised by means of which the edge of the nail may be raised, while the center is depressed. It has been highly recommended by those who have used it. Sometimes the case, becomes so bad that removal of the nail is the only remedy.

DEFORMITIES OF THE HANDS AND FEET.

Deformities of the hands and feet, are both natural and acquired. In Figs. 408 to 418 are illustrated a number of different forms of deformity, some of which represent hands and feet with a superfluous



Figs. 408 to 418, Congenital Deformities of the Hands and Feet.

or a deficient number of digits. In cases in which there is a sixth toe or finger, Figs. 412, 414, and 415, the extra digit is generally imperfectly developed. In some cases in which the number of digits is normal, two or more are connected together, as in Figs. 409 and 410, reminding one of the webbed feet of the goose. Extra digits are generally in the way; when this is the case, they should be removed by a surgical operation.

Clubbed Hands is a quite serious deformity, though fortunately rare. Much can be done to straighten the deformed organs by frequently manipulating them in such a way as to bring them into proper shape. In a majority of cases it is necessary to place the patient in the hands of a skillful surgeon.

Club-Foot is a deformity surgically known as *talipes*, of which there are several distinct varieties, as shown in Figs. 419 to 423. Fig. 419 represents a form of the disease known as *talipes equinus*. Fig 420 represents *talipes valgus*, or splay foot. Fig. 421 illustrates *talipes varus*, the most common form of club-foot. Figs. 422 and 423

represent two forms of *talipes calcaneus.* Club-foot generally exists at birth, but is sometimes acquired in childhood. In the majority of cases club-foot requires treatment by a skillful surgeon, but much can be done by the nurse toward obviating these difficulties, if attention is given to the condition of the feet at birth. If they are found to be

Fig. 419. Talipes Equinus.

Fig. 420. Talipes Valgus.

deformed as shown in Fig. 421, which is the most common of all the deformities of the feet, the nurse should take pains to turn the feet gently into a proper position by pressure of the hand. This should be done several times a day, and if persevering efforts are made in this direction a cure may often be effected. When the condition becomes

Fig. 421. Talipes Varus.

Fig. 422. Talipes Calcaneus.

Fig. 423. Talipes Calcaneus.

established by long continuance, it is often necessary to employ some form of apparatus in treatment. Figs. 424 and 425 represent shoes and braces intended to be worn in certain forms of club-foot.

Flat-Foot.—This condition is similar to splay foot. It consists in a loss of the arch of the foot. Persons suffering in this way have a very

low instep. The difficulty is occasioned by relaxation of the ligaments of the foot. The principal inconvenience occasioned is pain upon walking or standing long upon the feet.

Fig. 424. Shoe for Talipes Calcaneus.

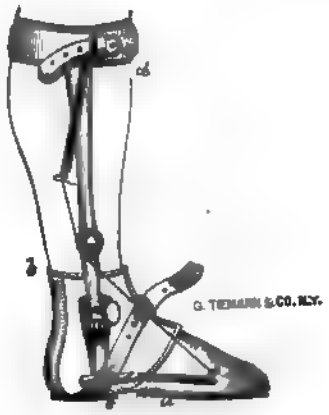


Fig. 425. Shoe for Talipes Varus.

Treatment.—The arch of the foot should be supported by a properly constructed pad placed underneath it. The pad may be composed

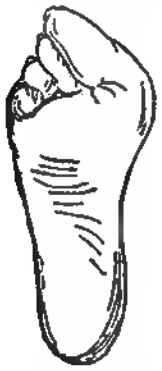
Fig. 426. Outline of Sole of Normal Foot.

Fig. 427. Sole of Normal Foot, also showing relative size of a fashionably toed shoe.

Fig. 428. Effect of Wearing Narrow-toed Shoe.

of cotton, rubber, or cork, placed beneath the instep in the shoe, or by means of adhesive strips and elastic tubes attached to the instep in such a way as to support it by traction.

Deformities of the Feet from Improperly Made Shoes.—The hands do not often become deformed to any great extent, unless in consequence of some serious accident or long-continued disease, as rheumatism or paralysis. But the contrary of this is true of the feet. In



429.

430.

431.

Figs. 431 to 433, Deformed Feet from improperly made shoes.

fact, it is almost impossible to find a properly shaped foot in any individual who has ever worn shoes or boots. Figs. 426 and 427 represent the outline of the sole of a healthy foot. In Fig. 427 may

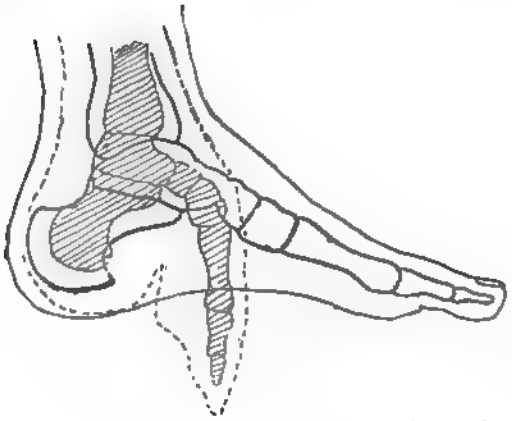
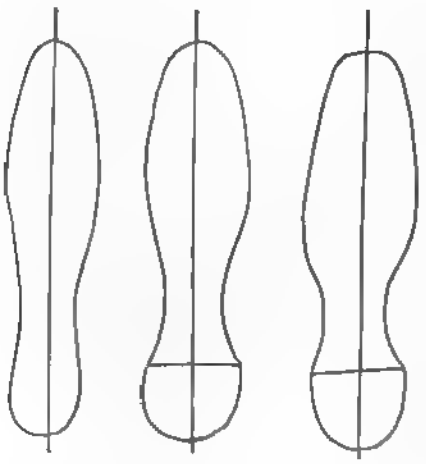


Fig. 432. Deformity of Chinese Woman's Foot, produced by bandaging.

Fig. 433. Outline of Sole of Chinese Woman's Foot.

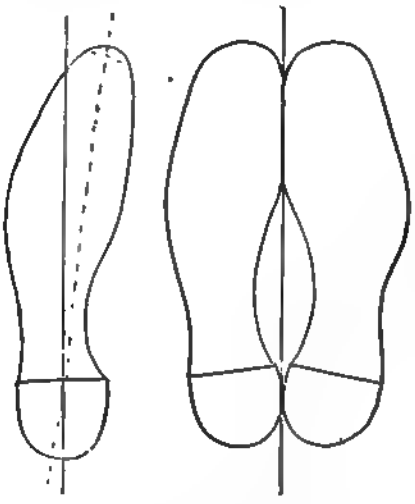
also be seen in dotted lines the outline of a narrow square-toed shoe. As will be readily seen, it is impossible for a well formed foot to be crowded into such a narrow space without injury. The character of

the injury inflicted upon the foot is shown in Figs. 428, 429, and 430, which illustrate similar deformities greatly increased by wearing improperly made shoes for a long time. Fig. 431 also illustrates the same. Not very much worse are the deformities produced by the absurd custom in vogue in China, of bandaging the feet, illustrated in Figs. 432 and 433. Figs. 434, 435 and 436 illustrate improperly constructed shoes, which are very certain to produce diseases of the feet, if worn any great length of time. In Figs. 437 and 438 are illustrated a form of shoe recommended by Prof. Meyer, the most scientific and reliable writer on this subject. Although shoes made after this style could not be said to be particularly beautiful, they will certainly be much better adapted to the shape of the feet, and hence much more conducive to the comfort and health of the feet, than any style of shoes fashionable at the present day.



434. 435. 436.

Figs. 434 to **436**, Outlines of Improperly Made Shoes.



437. 438.

Figs. 437 and **438**, Outline of Soles of Prof. Meyer's Shoe.

Weak Ankles.—This is a condition most often found in children. It may be the result of hereditary weakness, or of acquired disease, as infantile paralysis. Such cases require the employment of a properly made shoe, such as is illustrated in Fig. 439. The weak joint should be treated locally with electricity, the hot and cold pour, and daily rubbing.

Bow-legs, or Bandy-legs.—This a deformity in which the legs are bowed outward, as shown

in Fig. 440, which also illustrates an excellent form of brace to be worn in these cases. By the application of the brace very early in life, the difficulty may be overcome. Surgical operations have also been devised for the purpose, but these should not be resorted to when the difficulty can be cured by means of a properly adjusted brace. The principal cause of bow-legs is encouraging children to learn to walk before their limbs are sufficiently strong to sustain the weight of the body without injury.

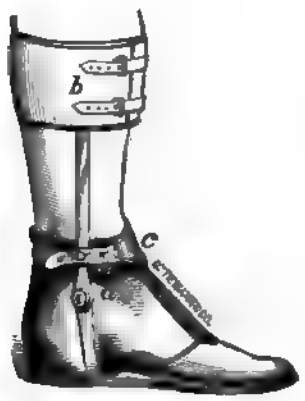


Fig. 439. Shoe and Brace for Weak Ankle.

Fig. 440 Brace for Bandy Leg.

Knock-knee, or Genu-Valgum.—This is a condition in which the legs are bent inward so that the knees interfere with each other in walking. It occurs in consequence of weakness of the ligaments or muscles about the knee. It sometimes occurs in consequence of strains. In some cases of children it becomes so bad that the patient cannot walk without crutches. Children suffering with this difficulty are generally poorly nourished, and hence supplying hygienic conditions is one of the most important elements of treatment. It is generally necessary, in addition, to support the weak limb by means of a splint placed at the back of the joint and over the outer side of the limb. The bandage should be applied in such a way as to correct the deformity as much as possible, the limb being by degrees restored to its natural condition. Very bad cases require specially constructed apparatus, such as is shown in Fig. 440.

Short-Leg.—This may be a natural or an acquired deformity. When the degree of shortness is not very great, the difficulty of walking may be relieved to a very considerable extent, and distortion of the body prevented, by an addition to the sole of the shoe worn upon the

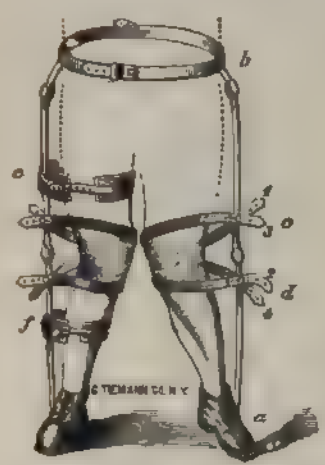


Fig. 441. Brace for Knock-knee.

Fig. 442. Extension for Short Leg

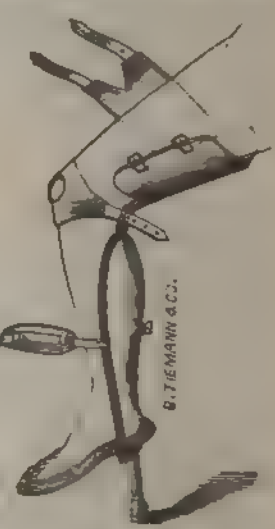


Fig. 443. Apparatus for Short Leg

foot of the shorter limb, as shown in Fig. 442. In cases in which there is a great degree of shortening, an instrument similar to that in Fig 443 is sometimes required.

DISEASES OF THE EYE.

The eye is one of the most delicate of all the organs of the body, and in consequence of improper treatment is very often the seat of serious disease. Owing to its delicate structure, and the great variety of affections to which it is subject, the majority of eye diseases require for their successful treatment the services of a physician who has given special attention to the treatment of this class of maladies. When such services cannot be secured, and the patient is obliged to do the best he can for himself, it is much safer to do nothing, or, at any rate, to adopt only such measures as are naturally suggested by the morbid condition of the patient, than to adopt active measures which may be more potent for harm than for good.

We shall call attention in this section to a few of the more common affections of the eye, especially to such as are capable of benefit by home treatment.

Congestion of the Conjunctiva, or Mucous Membrane of the Eye.—This is generally the result of exposing the eyes to the irritation of a strong wind, smoke, or dust. It is also occasioned by long-continued use of the eye in viewing small objects, as in reading, using the microscope, or engraving. Employing the eyes in small work by a strong artificial light is especially injurious. Congestion of the eyes occasions a sensation of smarting and itching in the eye, with heaviness and weight in the eyelids. The white of the eye is reddened, the blood-vessels being swollen so as to be visible. The symptoms are generally worse when exposed to a strong artifical light. The eyes are often watery Congestion is distinguished from inflammation by the fact that it is not attended by any other than a watery discharge.

Treatment.—The eyelids should have rest, and the eye should be bathed with tepid water several times a day. The eye douche is a very useful method of treatment, but cold water should not be employed, as it always does the eyes harm, contrary to the popular notion that bathing the eyes in cold water is a means of strengthening them. This is not an infrequent cause of congestion. In case there is considerable heat in the eye, a thin, tepid compress should be placed upon it and changed every few minutes. With this treatment the majority of cases will recover in a short time. After the disease becomes chronic, it may be necessary to apply a mild astringent, such as a solution of sulphate of zinc, a half a grain or a grain to the ounce of water. A few drops of this solution should be dropped into the eye once a day. In dropping medicines into the eye, the patient should be instructed to roll the eye upward, and the lower lid should be drawn down so as to form a little pouch, into which the medicine should be dropped. The patient should then be requested to close the lids and roll the eye about, so as to distribute the lotion over the whole mucous membrane. Cool compresses, or tepid bathing of the eye, should be employed after the application of the solution. We have found the tepid spray, and in some cases the hot spray, or hot sponging of the eye, a very excellent method of relieving congestion when other measures do not succeed promptly.

Catarrhal Conjunctivitis—Cold in the Eye.—Persons suffering with catarrh of the mucous membrane complain that the lids feel as if there were sand in the eye. They are stuck to gether in the morning, sometimes so firmly that they can scarcely be opened. The white of the eye is greatly congested. The lining of the lids has a red, velvety appearance Catarrh is the result of severe or long-continued exposure to the same causes mentioned as productive of congestion of the eye. The affection is in many cases attributed to taking cold.

Treatment.—Very little treatment is required if the patient has good care and gives the eyes entire rest. Dust and bright lights should be carefully avoided. When the lids are swollen, the eyes very red and hot, and the secretion of mucus abundant, the spray to the eye, or the eye douche, should be employed several times a day, Either cold or hot water may be employed for the douche. Thin compresses wet in cold water and changed every few minutes, not being allowed to become warm, should be used. A very excellent way is to have a block of ice and keep the cloths upon the ice. Poultices should never be employed. A very weak solution of sulphate of zinc, or alum, not over two grains to the ounce of either, may be used to advantage in many of these cases, a few drops being put into the eye every day The edge of the lids should be anointed with vaseline, sweet oil, fresh butter, or some other ointment. Patent eye-waters, and other secret remedies for the eye, should, of course, be entirely discarded. The practice of using poultices of tea leaves, alum whey, etc., etc., is to be condemned. If left to themselves, the majority of these cases recover without treatment, but when possible, they should receive careful attention, since the effects are sometimes quite serious. Catarrhal inflammation may be communicated from the patient to well persons, and hence great care should be taken to avoid opportunity for contraction of the disease by other persons.

Purulent Conjunctivitis—Suppurative Inflammation of the Eye.—This disease is also sometimes called contagious inflammation of the eye, as it is clearly a contagious disease. The symptoms are similar to those of the preceding disease, but are greatly intensified. At the beginning, the patient suffers with heat and itching in the eye, as if sand, or some other foreign body, had gotten into it; the edges of the lids stick together, and little beads of matter collect on the lower edge and at the corners of the lids, and become hardened; the mucous

membrane is very red and much swollen, and the eyelids are red and thickened; the discharge is at first watery, but soon becomes purulent or mattery. The patient now begins to suffer great pain about the eye and adjoining portions of the head; there is sometimes considerable fever; the eye is very sensitive to light; the mucous membrane becomes rough in appearance. This is one of the most dangerous affections of the eye, as the cornea is very likely to become affected by ulceration, which may often perforate the eye, causing a discharge of its contents. The disease generally runs its course in three or four weeks. It sometimes becomes chronic, and lasts months and even years. The causes are the same as those which produce catarrhal ophthalmia. When it breaks out in foundling hospitals, barracks, work-houses, boarding-schools, and similar places, it is likely to extend on account of its contagiousness. It is so common in India and Egypt that it is sometimes called Egyptian ophthalmia. The disease generally shows itself in one to four days from the time of exposure. The supposition that this or any other disease of the eye may be communicated by simply looking at a person suffering with it, is erroneous. It is necessary that little particles of the discharge find their way from the diseased eye to a healthy one in order to communicate it. Communication is often accomplished by means of towels, sponges, etc.; but particles may be carried by the air. It should be generally known that the inflammation of the eyes to which new-born children are subject may produce purulent inflammation of the eye in either children or adults.

Treatment.—The results of this disease depend chiefly upon its intensity. Bad cases are likely to result unfavorably in spite of all that can be done for them. The patient should be confined in a darkened room, and in severe cases should be required to keep his bed. The room should be well ventilated, however, an abundance of fresh air being of great importance. The contagious character of the disease should be borne in mind. A person nursing a patient suffering from it, would do well to protect the eyes by means of large glasses. When the discharge gets into a healthy eye, it should be washed away at once with tepid water.

As soon as the nature of the disease is discovered, the healthy eye should be closed and carefully protected by means of a little pad of cotton, covered with adhesive plaster in such a way as to entirely exclude the air. This compress should be removed twice a day, and the eye

carefully washed, great care being taken to avoid communicating the disease from the other eye. When the symptoms of disease occur in the healthy eye, the pad should be left off, and it should be treated the same as the other.

In the treatment of the eye itself, cleanliness is of the greatest importance. The eye should be cleansed every hour or two by means of a syphon syringe, the small ear douche tube being gently placed between the eyelids so that the whole eye may be carefully washed. When this cannot be done, a stream of water should be carefully poured upon the eye while the lids are drawn apart and held up by pressure with the fingers. The water should be of a tepid temperature, and is rendered more soothing by the addition of a little milk. The nurse should take great care to avoid getting any portion of the discharge into her own eyes, which is quite likely to happen in the use of the syringe if special care is not taken. Crusts accumulating about the eye should be removed by soaking with warm water, or water in which soda has been dissolved, in the proportion of a teaspoonful to a pint. A little vaseline or lard should be applied to the edges of the eye two or three times a day.

In very severe attacks, cold or ice compresses should be applied constantly. The best plan of application is, to moisten compresses of lint or sheet cotton, of sufficient size to cover the lids, and lay them upon a block of ice until they become cold. One of these should be placed over the eyes, and exchanged for a fresh one as soon as it becomes the least warm. When the inflammation is very high, it is sometimes necessary to change the compresses every five minutes. When the extreme cold becomes disagreeable, simple cool compresses should be employed. If these are still unpleasant, hot fomentations, or a hot spray to the eyes, should be used several times a day. In addition to these measures, astringent lotions may be applied with advantage. One of the best applications is a teaspoonful of powdered alum to a quart of water, a small quantity of which should be injected between the eyelids with a syringe every half hour during the day, and once in two hours during the night, at first. A surgeon should be employed in all cases of this kind whenever possible.

Inflammation of the Eyes in the Newly Born.—This affection may be either catarrhal or purulent in character, and in this respect may resemble either one of the two last-mentioned diseases. It occurs within a few days, or in some cases not for several weeks, after birth. The chief causes are infection of the child's eyes

with the discharges of the mother, want of cleanliness, and exposure to bright lights and cold winds. The disease is generally much less severe than in purulent conjunctivitis in older persons, but, as previously remarked, it may give rise to the more serious form of the disease in either children or adults.

Treatment.—By proper care, this disease may be prevented. The eyes should be washed immediately after birth, by means of clean sponges, lint, etc., the nurse being careful to cleanse her hands thoroughly before washing the child. Prompt treatment at the beginning of the affection is very important. The method of treatment is essentially the same as that described for the preceding disease. Care should also be taken to cleanse the eyes by an injection of warm water before applying the alum preparation.

Diphthertic Inflammation of the Eye sometimes occurs in connection with diphtheria in other parts. It is a very dangerous disease, and if at all severe, is likely to result in loss of sight. The treatment is the same as for purulent ophthalmia.

Sympathetic Inflammation of the Eye.—In case of severe injury of an eye, especially through the lodgment of a foreign body in it, causing inflammation and destruction of the sight, there is great danger that the other eye will become affected through sympathy. This danger is so great that it is generally considered best to remove the injured eye by a process known as enucleation of the eyeball. The deformity arising from the operation is easily concealed by means of an artificial eye. Artificial eyes are now made to resemble the genuine in appearance so closely as to be distinguishable only by a close examination. Artificial eyes consist of thin porcelain plates properly curved and colored.

Granular Lids—Trachoma.—This is a condition in which the mucous membrane of the eyelids becomes rough in consequence of the formation of little round prominences, known as granulations. The lids are deep red, and generally have a velvety appearance. The mucous membrane is very much thickened; and in consequence of the constant friction of the rough surface upon the cornea, it is generally congested, often ulcerated, and in bad cases, opaque, occasioning great pain, sensitiveness to light, and even diminution of sight.

This condition is generally the result of neglect of proper treatment of inflammation of the eyes. It is in most cases largely dependent upon disorders of the stomach and liver, or both, which have been

occasioned by improper diet, particularly the use of condiments, fats, and excessive quantities of meat.

Treatment.—The patient must carefully regulate his diet and all his habits of life. The food should be simple, but unstimulating in character. Tea, coffee, tobacco, and condiments should be scrupulously avoided. Fat meats and pastry, and excessive quantities of animal fat, should also be avoided. Attention should be given to the general health, especially to improvement of the digestion and increasing the activity of the liver and skin by eliminative baths. The eye should be kept very clean by bathing in tepid water two or three times a day. It should also be protected from bright lights by wearing a hat with a broad rim, or using colored glasses. The best kind of glasses for this purpose, especially in the winter season when the reflection of the sunlight from the snow is often very painful and injurious, is the kind known as "London smoke." An alum wash, consisting of a teaspoonful of powdered alum to the pint of water, or a solution of sulphate of zinc, two grains to the ounce, should be applied to the eyes after careful bathing two or three times a week. The application to the eyes of the hot spray, or hot fomentations, for five or ten minutes once a day, will often accomplish much more than astringents or irritants of any sort. Care should be taken, however, not to employ these methods of treatment longer than the time specified, as the congestion and inflammation may be increased. The astringent solution should be applied directly to the affected surface. The mucous membrane of the lower lid may be easily exposed by causing the patient to look upward, while the lid is drawn down by pressing upon the skin just below it. The upper lid, however, must be inverted by means of the fingers. This is best done as follows: Seize the edge of the lid by the thumb and finger of the right hand, and stretch it outward and downward. Then place the end of the fore-finger of the other hand upon the upper surface of the lid just below the eye-brow, pressing somewhat firmly upon the eyeball, and turn up the outer edge of the lid. By a little practice, the lid can be easily folded over. It is often very convenient to be able

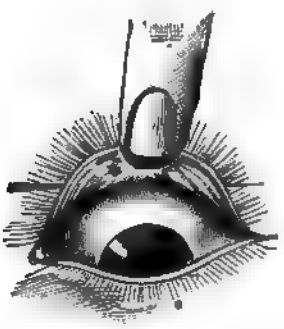


Fig. 444.

to perform this simple operation, as it can be brought into service very often in removing dirt and other foreign bodies from the eye. The operation may also be performed by rolling the lid over a pencil or knitting needle, as shown in Fig. 444. The edges of the lids should be anointed twice a day with vaseline or some other good ointment. A long time will be required in most cases to effect a cure, as the disease is very chronic. The disease rarely if ever recovers of itself, and often requires the services of a very skillful oculist.

Inflammation of the Edges of the Lids.—This affection is indicated by redness of the edges of the lids, and the formation of crusts about the roots of the lashes. It occurs most often in dry, hot weather, and is especially excited by dust. Want of cleanliness, and neglect to use glasses when they are required, are also common causes. It may be the effect of taking cold, or exposure of the eyes to bright light, or using them by intermittent or feeble light. It is not infrequently found as one of the results of scarlet fever or measles. It is of most frequent occurrence in scrofulous children, and in a mild form it is very often met with in consequence of straining the eyes with fine work.

Treatment.—The most scrupulous attention must be given to cleanliness. The eye should be washed three or four times a day with tepid water, or milk and water, or with a weak solution of baking soda, a teaspoonful to the pint of tepid water. When the crusts are very thick, bread and water poultices or fomentations should be applied until they are softened sufficiently to be easily removed. Diseased or stunted eyelashes should be pulled out by means of a pair of forceps. In severe cases, when a considerable portion of the lid is affected, all of the lashes should be pulled out or trimmed close to the lid. It is often necessary to keep the eyelashes pulled out for some time. An alum wash, a teaspoonful to the pint of water, should be applied daily, after thoroughly cleansing with tepid water.

Acne of the Eyelids very often occurs in persons suffering with acne in other parts of the face. It of course affects the edges of the lids, being an inflammation of the sebaceous or hair follicles. The causes are the same as those which produce acne elsewhere, together with exposure of the eyes to cold winds, bright lights, etc. In treatment, the same remedies should be employed as have been recommended for inflammation of the edges of the lids, and in addition, cold compresses should be ap-

plied when the heat and inflammation are considerable, and poultices or fomentations, when the little pimples have a tendency to suppurate or "come to a head." The diet of the patient should be very carefully regulated as directed in other forms of acne.

Blear Eyes.—This is a condition in which the natural luster of the eye is wanting. It is occasioned by excessive secretion of matter by the meibomian glands, which are excited to abnormal activity by irritation, or inflammation of the edges of the lids, which are usually red and irritable. The term is also applied to a condition in which the natural secretions of the eye are wanting, which is generally the result of long continued inflammation, particularly of chronic granulations

Treatment.—When due to excessive secretion of fatty matter, from irritation of the lids, the same treatment recommended for the preceding affection should be employed. When due to deficient secretion, the disease is generally incurable, on account of the great changes which take place in the mucous membrane. It may be much relieved, however, by applying a few drops of milk to the eye several times a day, or a little glycerine in the proportion of a teaspoonful to a tablespoonful of soft water.

Stye—Hordeolum.—This is a small boil, which generally has its seat near the margin of the lid. In some cases, the whole eyelid becomes greatly swollen and the eyeball congested. There is generally pain, and the affected part is very tender to the touch. The disease follows the usual course of a boil, and has a great tendency to return repeatedly, so that the patient may not be free from the affection for several months.

Styes are most frequent in persons addicted to habits of dissipation. They often result from disorders of the stomach. Styes are of frequent occurrence in persons suffering with acne.

Treatment.—Styes, like boils, occasionally disappear without coming to a head, but the most usual result is suppuration and discharge. Absorption without suppuration may be produced in some cases by vigorous application of cold or iced compresses at the beginning of the disease; but as a general rule, the application of poultices or fomentations is much to be preferred. When it is evident that pus is formed, the disease may be shortened by lancing with a knife. The poultices employed, either before or after the boil is opened, should be very small, as injury may be done to the eye by continuous application of large poultices. The edges of the eye should be kept anointed with vaseline, sweet cream,

or some other simple unguent. Attention should be given to the diet and all means for improvement of the general health.

Pterygium.—This is an affection of the eye which frequently arises in consequence of chronic inflammation or congestion of the conjunctiva, although it may also originate independent of any inflammation. It consists of an enlargement of the blood-vessels of the mucous membrane of the eyeball, and appears as a red triangle, the apex of which appears at the edge of the cornea, or encroaches upon it, while the base is at one corner of the eye. It often stops when it reaches the edge of the cornea, but sometimes extends to the center of the pupil, though never going beyond this point.

Treatment.—The disease does not affect the sight, and does no harm, except as a blemish, unless it encroaches upon the pupil. When small, it may frequently be caused to disappear by applying to the eye an alum wash, a teaspoonful to the pint of water, three or four times a week. When the growth is very large, however, so that it interferes with the sight, it should be removed by a surgical operation, which can only be performed by a competent surgeon.

Tumors of the Eyelids.—Small growths sometimes appear upon the eyelids, particularly near the edge. One form, known as *chalazion*, is due to obstruction of the duct of a meibomian gland in consequence of inflammation, which results in the accumulation of the fatty secretion. These tumors are generally about the size of a pea. They are most manifest on the inner surface of the lid, lying just beneath the mucous membrane. They are most often found in the upper lid. Another form of tumor, known as *milium*, is situated at the edge of the lid. Generally quite a number are found, each about the size of a millet seed. Other tumors, as sebaceous tumors, warts, fatty tumors, fibrous tumors, etc., as well as cancer, are sometimes found upon the eyelids.

Treatment.—All these abnormal growths are best treated by removal by a surgical operation. In many cases, the little white tumors which appear along the edge may be cured by simply pricking with a needle and squeezing out the contents

Ptosis—Inability to Open the Eye.—This is an affection of the eye in which the upper lid drops down more or less, in some cases to such an extent that the patient is unable to open the eye at all In some cases, this is due to paralysis. In others, it occurs in consequence of great swelling of the upper lid.

Treatment.—The cause must be removed, so far as possible. When due to paralysis, appropriate treatment should be employed, electricity being the chief remedy indicated.

Inability to Close the Eye.—This is a condition which is generally due to paralysis of the orbicularis palpebrarum, or circular muscle of the eye. In consequence of the wide gaping of the eyelids, the patient has a peculiar staring appearance. The eye being constantly exposed to irritation in consequence of dust, etc., there is a constant flow of tears, and, sooner or later, inflammation is produced.

Treatment.—When due to paralysis, electricity should be used, being applied daily by means of small sponge electrodes. The positive pole should be placed upon the forehead just above the eye, while the negative is passed across the eyebrow, and beneath the eye. The current should be applied not more than one to three minutes at a time. In some very bad cases, it becomes necessary to attach the lids together by means of stitches.

Deformities of the Eyelids.—Sometimes, in consequence of inflammation or injury to the eyelids, the edges may turn in or out in an unnatural degree, in consequence of which the functions of the eye may be greatly interfered with. When the lids are turned in, the eyelashes rub upon the eyeball and produce irritation; when they turn out, the tears do not escape readily through the natural channels, and a portion of the mucous membrane is exposed to irritating influences.

Treatment.—Since these diseases are usually the result of chronic inflammation of the eyes, they should be prevented by proper treatment of the origin of the disease. When a deformity has been produced, however, a surgical operation is usually necessary to restore the lid to a healthy condition. In cases of Entropion, in which the opening between the lids is much narrower, making the eye look smaller than natural, relief may be obtained by means of an operation known as *canthoplasty*, which consists in extending the opening between the lids by cutting the outer corner with a knife or scissors. We have sometimes afforded patients very great relief from suffering by performing this operation.

Wild Hairs in the Eye.—This is a common term applied to a condition in which the lashes grow in an improper direction or position. In a form of the disease known as *trichiasis*, the lashes are not confined

to the edge of the lid, their proper position, but grow upon the mucous membrane within the edge, being generally very irregular, and often small, pale, and stunted. In another form of the disease known as *districhiasis*, there are two rows of lashes instead of one, the outer being in proper position, while the inner is farther back and turned inward. In consequence of these irregularities of the lashes, the mucous membrane of the eye becomes greatly irritated, the eyes becoming red, watery, and irritable. The patient complains of constant prickling and itching, as if sand, or some other foreign body, were lodged beneath the lid. Sometimes the cornea becomes inflamed, and sight is impaired.

Treatment.—When the difficulty is not very severe, it may be successfully treated by carefully extracting with a pair of small pincers the offending lashes, repeating the operation as often as necessary. After being pulled off a number of times, the growth is usually checked, and thus a cure is effected. In very bad cases, it sometimes becomes necessary to destroy the hair follicles by passing to the root of each lash a fine needle, dipped in a strong solution of caustic potash. Sometimes electricity is used for the same purpose, the current being passed through a needle, which is inserted at the root of the hair. In extremely bad cases, the mucous membrane containing the offending lashes must be removed by a surgical operation.

Spasm of the Eyelids.—This is a spasmodic affection of the circular muscle of the eye which closes the lids. When severe, the eyelids are pressed so firmly together that the patient cannot open them. Indeed, in some cases the contraction is so strong that the eyelids cannot be drawn open without very great pain. In other cases, there is only temporary twitching or contraction of the lids, which soon disappears. This affection is generally due to irritation of the eye, as in inflammation of the cornea or conjunctiva. It sometimes occurs in connection with neuralgia of the face. The irritation occasioned by foreign bodies in the eye often produces severe spasms.

Treatment.—When due to inflammation, or dirt in the eye, the cause must be removed by proper treatment. When occasioned by neuralgia, heat should be applied, together with other remedies for that affection. In cases in which it seems to be independent of these conditions, it may often be removed by pressure of the finger upon the supraorbital nerve. This may be accomplished by pressing with the fin-

ger upon a point just above the little notch which may be felt by passing the finger along the eyebrow. Strong pressure just in front of the ear will also sometimes instantly relieve spasm of the eye. Another excellent remedy is holding the face in cold water for some minutes, or the application of ice compresses over the eye.

Nictitation—Twitching of the Eyelids.—This is a convulsive twitching of the eyelids which may be either very slight or severe. The twitchings sometimes follow each other very rapidly. This affection most often occurs in persons of a nervous temperament, and when the eyes are tired from overuse and nervousness. An excited state of the mind will greatly increase the difficulty.

Treatment.—The general health should be improved by proper remedies. If there is any irritation of the lids, the eye douche should be daily used. The application once or twice a day of the hot spray to the eyes with the lids closed, is also a useful remedy.

Adhesion of the Lids.—In some cases, in consequence of injury, especially injuries of the eye from lime, acids, hot iron, etc., the lids become adhered together, or to the eyeball. These difficulties can be overcome only by means of a proper surgical operation.

Epiphora—Watery or Weeping Eye.—This is a condition in which the tears are secreted more rapidly than they can be carried away from the eye by the nasal duct, and hence, are allowed to flow over the lids and down the cheek. It may result from excessive secretion of tears, or obstruction of the passage by which the fluids of the eye are conducted to the nasal cavity. Obstruction may be the result of closure of the opening into the lachrymal passages or tear ducts, or to inflammation or stricture of some part of those passages. The starting point of the difficulty is generally inflammation in the corner of the eye next to the nose. It most often accompanies a severe cold in the head, being really an extension of the disease of the nasal cavity to the mucous membrane of that portion of the eye. Sometimes, in consequence of the inflammation, an abscess is formed in the tear sac, which opens and forms a fistula from which the tears may run upon the face. In other cases, there is a catarrhal condition of the mucous membrane lining the tear sac, which causes it to become filled with a mucous secretion. This difficulty is indicated by a little swelling in the corner of the eye, which may be emptied by pressure, the mucus being squeezed out from the edge of the lid, from which it may be wiped away.

Treatment.—Many people suffer on for years with a difficulty of this sort without making any attempt to obtain relief, although the difficulty may in most cases be readily cured by a surgical operation. It is generally necessary to divide the little tear sac, and in many cases, a long-continued course of dilatation of the canal which leads from the eye to the nose, is necessary. This is accomplished by means of delicate probes, Fig. 445, the size of which is gradually increased

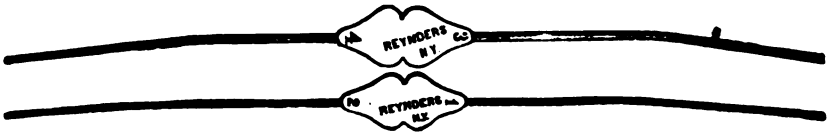


Fig. 445.

as the canal is enlarged. The old method of treating these affections by inserting silver tubes to conduct the tears from the eye to the nasal cavity, is not now employed.

Cross-Eye—Wall-Eye—Squint—Strabismus.—The term cross-eye, or squint, is applied to a condition in which one eye is drawn in toward the nose. When the eye is turned toward the outer corner, the condition is one known as wall-eye. Inward, or converging squint, generally begins in early childhood. The squint is usually the result of long-sightedness, being occasioned by the constant strain necessitated in viewing near objects. At first, this affection is accompanied by double vision; that is, the patient sees two objects where but one exists. After some time, however, but one object is seen, as the squinting eye is not used in viewing objects, in consequence of which the power of sight is gradually lost. The immediate cause of strabismus is the weakening of one or more of the muscles of the eyeball. This may be the result of paralysis of some of the muscles of the eyeball. Squint sometimes appears very suddenly. In such cases, it is generally indicative of disease of the brain, as in meningitis and tumors of the brain.

Treatment.—When due to paralysis, the difficulty may often be relieved by the local application of electricity. The negative pole should be placed over the closed eye, or at the inner side of the nose, the positive being placed upon the forehead just above the eye. In many cases it is necessary to perform an operation upon the eye, which consists in completely or partially dividing the muscle upon the side of the eyeball toward which the eye turns.

Oscillation of the Eyes—Nystagmus.—This affection consists of a peculiar restless movement, or oscillation of the eyeballs. The movement is generally from side to side, but is sometimes rotary. Patients suffering this way are often obliged to read with the print turned in a vertical direction on account of the blurring from the letters running together. The affection is occasioned by a variety of causes, which are, unfortunately, generally of such a character as to render the condition incurable.

Inflammation of the Cornea—Pannus.—This disease is indicated by a congested condition of the cornea, the blood-vessels being visible, great sensitiveness to light, severe pain, and weeping of the eye. Pannus may be occasioned by the irritation of inverted eyelashes, by conjunctivitis, and especially by granular lids.

Treatment.—When due to granular lids, the disease should be treated as elsewhere recommended for that condition. Fomentations and hot spray to the eye are especially serviceable.

Ulcers of the Cornea.—Ulcers of the cornea may generally be seen as little white spots near its margin. There is generally great sensitiveness to light, and severe pain, with congestion of the eye. This is a very serious affection, as penetration of the eye is quite apt to occur. The majority of cases are best treated by means of careful restriction of the diet, perfect rest of the eye in a darkened room, the application of a light bandage over the eye, and the use of the hot fomentation or hot spray three or four times a day half an hour each time. Ulcers of the cornea are very apt to leave behind them white spots.

Opacities of the Cornea.—In addition to opacities, or spots produced by ulcers, the cornea sometimes becomes partially opaque in consequence of inflammation, or pannus. There are also various other forms of opacities.

Treatment.—Very extensive opacities of the cornea sometimes wholly disappear in time without treatment; but in many cases, the most thorough treatment is ineffectual. In order to secure absorption, it is necessary to increase the activity of the circulation in the eye, which may be accomplished by means of astringent solutions—as a weak solution of alum, or tannin, one or two grains to the ounce of water, or still better, by means of hot fomentations or the hot spray to the eye. The spray should be used daily for fifteen or twenty minutes.

The spots cannot be removed by an operation, as many people suppose, as they are in the substance of the cornea itself, not "films over the eye," as they are sometimes called. Sometimes, however, when the opacity is immediately over the pupil, so that the sight is greatly interfered with, benefit may often be derived by an operation known as *iridectomy*, by which an artificial pupil is made at one side by cutting an opening through the iris. An ingenious London surgeon some years ago removed the opaque portion of the cornea in a case under his care, and substituted for it a portion of a healthy cornea from the eye of a rabbit. Attempts have been made to substitute a piece of glass for the opaque portion of cornea, but without success.

Arcus Senilis.—This is the term applied to an affection of the cornea which manifests itself as a silvery rim near the edge of the cornea but separated from the edge by a ring of transparent tissue. It is due to fatty degeneration of the tissue of the cornea, and is considered to be an indication of the beginning of similar changes in other parts of the body, particularly in the blood-vessels of the brain. It is seen most frequently in persons over fifty years of age, though it may occur at an earlier period, especially in persons addicted to the use of alcoholic drinks.

Inflammation of the Iris—Iritis.—This affection is characterized by pain in the eye so severe as to prevent sleep. The pain also extends to the brow and the temples, in consequence of which it is often mistaken for neuralgia. The eye is congested, especially about the cornea. The lids are likely to be swollen and puffy. There is at first a sensation of burning and itching in the eye, but the pain shortly becomes much more severe, being sharp and cutting. The pain is worse during the night, diminishing toward the morning. There is some feverishness, coated tongue, want of appetite, and often nausea and vomiting, so that the affection is sometimes mistaken for a bilious attack. Iritis, may also be regarded as a simple cold in the eye at first, an error which may result in loss of the sight by occasioning neglect. A symptom of very great importance is contraction of the pupil. The pupil generally contracts promptly when exposed to a strong light, and dilates when the light is withdrawn. If the pupil is contracted and remains so, whether exposed to strong light or not, or if it moves very slowly, there being at the same time great sensitiveness to light, inflammation of the iris may be very

strongly suspected. An excellent test is to drop into the eye two or three drops of a solution of atropia, two or three grains to the ounce of water. The effect of this treatment is to dilate the pupil. If the pupil is found greatly enlarged fifteen or twenty minutes after the application of the atropia, the iris is probably not affected. The most common causes of iritis are rheumatism and syphilis, which may result from overuse of the eyes, from sympathetic irritation with another eye which has been the seat of injury, or from direct injury.

Treatment.—The great danger of this disease is that the pupil will become permanently contracted through adhesion to the cornea or to the crystalline lens. The best means of preventing this is dilatation with atropia. A drop or two of the solution of atropia mentioned

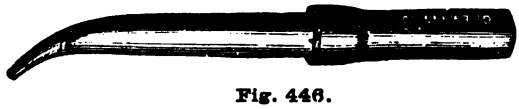


Fig. 446.

before should be applied to the eye once in five minutes for a half hour at a time, three or four times a day, by means of a medicine dropper, Fig. 446, or a camel's hair brush. The lower lid should be turned down and the solution dropped into the pocket formed between the edge and the eyeball. The eye should be carefully protected from light by confining the patient in a dark room if the inflammation is very severe. The well eye, as well as the weak one, should be given perfect rest, as it cannot be used without irritating the other. Hot fomentations or the hot spray, as hot as can be borne, should be applied over the closed eye one hour at a time, from three to six times a day, according to the severity of the case. In some cases, when the pain is very severe, fomentations should be kept up continuously, until the pain is permanently relieved. When the eye has received a severe injury, the application of fomentations is an excellent means of preventing iritis. Wet-sheet packs and vapor baths may often be used with advantage in treating cases of severe inflammation of the eye, being excellent derivative agents.

Persons suffering with chronic iritis should carefully protect the eye from a bright light by means of blue or London smoke glasses, and should avoid taxing the eyes severely in any way. The use of tobacco and alcoholic liquors should be particularly avoided, as also exposure to the irritation of tobacco-smoke.

Dilated Pupils—Mydriasis.—Unnatural dilatation of the pupils is produced by belladonna or atropia, hyoscyamus, stramonium, and other drugs. It may also result from paralysis of one of the nerves of the eye. It is frequently the result of rheumatism or of syphilis. It usually affects one eye, but may involve both. The sight is generally somewhat impaired.

Treatment.—Electricity is a remedy of value in this affection when it is not due to some acute disease of the brain. Benefit may also be derived from frequently closing the eyelids and compressing the eyes as firmly as possible, and also by frequent exercise in reading.

Contraction of the Pupil—Myosis.—This condition of the pupil is produced artificially by poisoning with opium or with calabar bean. The pupil is sometimes contracted to the size of a pin-head, or even less. This condition may also arise from paralysis of one of the nerves of the eye, or from irritation of the third nerve, which supplies the eye. It sometimes results from long use of the eyes in viewing minute objects, as in the study of microscopy, watch-making, reading, etc. It is also a symptom in some affections of the spine, and in inflammation of the brain.

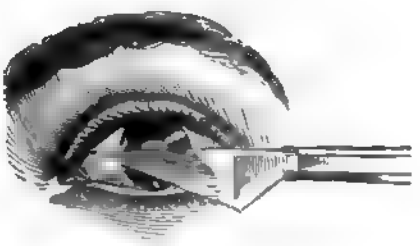


Fig. 447.

Irregular contraction of the pupils, one being large and the other small, is also observed in some cases of cerebral disease. Nothing can be done in these cases except to remove the cause of the affection as far as possible.

Cataract.—This is a disease of the crystalline lens in which it loses its transparency, becoming opaque, so that the entrance of light to the eye is obstructed. When the disease is fully developed, the patient can barely distinguish light from darkness. The pupil loses its natural blackness, the opaque lens being visible behind it. Cataract is sometimes spoken of as being *on* the eye, which is a popular error, as it is within the eyeball. In former times many physicians, as well as the common people, often mistook the white spots, already described as opacities of the cornea, for cataract.

Treatment.—The only treatment is a surgical operation, which consists in removal of the crystalline lens. This is usually done by

making an opening in the eyeball near the edge of the cornea, by means of a cataract knife. Fig. 447. Formerly the lens was punctured by means of a delicate needle passed into the eye, an operation known as "needleing." This plan was adopted particularly in young children. It is now abandoned, however. In the hands of skillful operators, fully four-fifths of those operated upon recover useful sight. It is generally necessary that the patient should wear glasses, two pair being usually required, one for distance, and the other for near objects, as the power of accommodation is of course lost by removal of the lens.

Fig. 448.

Fig. 449.

Diseases of the Choroid, or Color-Coat of the Eye—The choroid membrane is a continuation of the iris, and is the colored membrane which lines the back part of the eyeball. It can be recognized only by means of the ophthalmoscope. Figs. 448 and 449.

This instrument consists essentially of a concave mirror with an opening in its center, by means of which light is thrown into the eye of the patient, while the examiner looks into the eye through the small opening in the mirror. By means of this little instrument, the whole

interior of the eye can be readily examined, its various structures being brought clearly into view. Fig. 449 illustrates the most improved form of the apparatus, which is furnished with a set of small lenses, arranged in such a manner as to be capable of being brought opposite the opening in the mirror, thus magnifying the view obtained by the mirror. Little was known respecting the diseases of the interior of the eye before the invention of the ophthalmoscope by Helmholtz, about thirty years ago. Disease of the choroid requires the attention of a skillful oculist.

Diseases of the Retina.—Among the most common causes are the use of tobacco or alcohol, overuse, bad light, injury to the eye, and disease of the kidneys. These are among the most serious of eye disorders, being in many instances incurable. When resulting from the use of tobacco or alcohol, great improvement generally occurs from the disuse of narcotic stimulants of all sorts. The use of electricity is a valuable remedy in many of these cases. There is a peculiar form of disease of the retina in which it becomes covered more or less densely with black spots. A prominent symptom of this disease is night blindness. Patients thus affected are able to get along without difficulty in the daytime, but become partially blind after sundown. There is also a narrowing of the field of the eye, so that objects are seen distinctly only when directly before the center of the pupil. Little can be done for these cases by way of treatment.

Diseases of the Optic Nerve.—When the optic nerve is seriously diseased, a considerable or complete loss of sight is generally the result. It is subject to inflammation, paralysis, and atrophy. The use of tobacco is a very frequent cause of these affections. The treatment is the same as that suggested for diseases of the retina.

Glaucoma.—This is a very serious disease of the eye, the nature of which is not thoroughly well understood. The eyeball becomes very hard in consequence of an increase of its fluid contents, the result of which is paralysis of the optic nerve in consequence of the severe pressure. When acute, it is generally very painful. The pain is generally accompanied by flashes of light, appearances of rainbow colors, and dimness of vision. The disease should not be mistaken for neuralgia, as it requires very prompt treatment at the hands of a skillful surgeon. It is usually necessary to perform the operation known as iridectomy, an operation described on page 1493.

Specks before the Eye.—Muscæ Volitantes.—Many persons are constantly annoyed by various floating objects before the eyes, sometimes described as specks, and again as cobwebs, circles, strings of beads, etc. Sometimes opaque spots of considerable size are present. The small specks, cobweb appearances, etc., are generally due to disturbance of the rays of light by changes in the cell structure of the vitreous humor of the eye. The larger and denser spots are generally due to the presence of small clots, or rather opaque bodies in the vitreous humor. These can be readily seen by examination of the eye by the ophthalmoscope. Cases have been met with in which the embryo of the tape-worm, or the cysticercus, were found in the humors of the eye. Persons whose eyes are healthy, are often annoyed with floating specks. As a general thing, they need not give serious alarm. They are by some considered as an indication of an inactive state of the liver, and in some cases, of disease of the womb. The spots can generally be seen quite readily by persons troubled with them, by looking at a white surface through a pin-hole opening in a card. A bright light covered by a ground-glass shade is a good object to look at. These little objects sometimes become quite an annoyance. An eminent German microscopist has been obliged to make a map of the opacities in his eyes, for use in correcting the observations which he makes with the microscope.

Treatment.—The most that can be done is to improve the general health of the patient. In case the liver is inactive, fomentations should be applied over the organ daily, and the abdominal bandage should be worn at night. Condiments, butter, fat meats, tea or coffee, tobacco, and alcoholic liquors should be carefully avoided. In some cases, benefit may be derived by the application of fomentations and of electricity to the eye.

Amaurosis.—This malady has been described as a disease in which the patient sees nothing and the physician sees nothing. This remark was made before the discovery of the ophthalmoscope, and when the term was applied to a large number of conditions of the eye which were not understood. It is now applied to a gradually increasing paralysis of the optic nerve, or to blindness resulting from disease of the brain. A form of the disease known as tobacco amaurosis, is frequently met with in smokers. Indeed, the use of tobacco and of alcoholic liquors are the most frequent of all causes of this disease. So

many cases have been reported in the last few years in which the sight has been nearly or quite ruined by the use of tobacco that all oculists now condemn it as an exceedingly harmful drug.

Treatment.—When due to disease of the brain, or paralysis of the optic nerve, a cure is impossible in many cases. Electricity is one of the most useful remedies. Tobacco amaurosis cannot be cured without the patient renounces the use of the weed, which is in most cases sufficient to effect a cure, though the use of electricity is an excellent means of expediting recovery.

Pain in the Eye.—Simple pain in the eyeball is generally the result of excessive use of the eyes. It is also caused in cases in which persons who require the use of glasses neglect to use them. It need not be regarded as a very serious symptom if it is only occasioned by overwork and is relieved by proper rest, while the acuteness of the sight is in no way diminished. When it is very acute and continuous, or so severe as to prevent sleep, there are good grounds for apprehending that some serious disease is present. Smarting, burning, or stinging pain in the eye, is generally located in the external structures.

Treatment.—Pain due to overuse is relieved by rest and bathing the eyes with tepid water. The pain of inflammation is relieved by hot or cold applications. Cool or tepid applications are generally best in inflammations of the mucous membrane of the lids, and hot applications when the cornea or iris is affected. Thick compresses should never be laid upon the eye. When cold applications are needed, a light compress of three or four thicknesses of linen or a thin sheet of lint should be wet and laid over the eyes, being changed every five or ten minutes, or as often as it becomes warm. In severe cases, several compresses may be employed, being kept cool by laying upon a block of ice. The thinness of the compress allows for evaporation, so that the heat is not retained, as might be the case with a thick compress, which would thus act as a poultice and might be the means of much harm.

Blurred Sight—Weak Vision.—This is not a serious symptom when the acuteness of vision is not diminished; that is, if a person can read fine print with ease for a short time, even though the letters soon run together, the difficulty is probably a purely functional trouble which will be readily relieved by rest and tonic treatment. If there is blurred sight, with neither ability to read fine print nor to see small objects clearly even for a short time, the symptom is sufficiently serious to demand immedi-

ate attention from a good oculist. Blurred or weak sight can generally be relieved by the use of spectacles. In many cases the inability to use the eyes for any great length of time is due to some general disease, as nervous debility, dyspepsia, or cerebral congestion. These cases of course require improvement of the general health, or relief of the primary disorder.

Loss of Sight.—In many instances, loss of distinct vision is so gradual that patients are scarcely aware of the fact until their sight has become very extensively impaired. This is especially the case when only one eye is affected. We have met a number of cases in which cataract had become fully developed without the individual being aware of the existence of any difficulty with the eye. Loss of vision is indicated whenever there is blurred sight of either eye with inability to read fine print or to see distinctly small objects which have once been readily discerned. The most accurate way of testing the sight is by means of "test types," such as are shown on page 1501.

If an individual is unable to read under any circumstances the fine print known as "diamond," there is certainly some loss of sight. If he can read the finest type easily for a few seconds, but is then unable to read farther on account of the letters running together, the difficulty can probably be relieved by the use of proper glasses. In employing the test types, the distance at which the different varieties of type can naturally be read should be observed. No. I should be easily read at a distance of one foot from the eye; No. II, at a distance of two feet, No. III, at three feet; No. VI, at four feet, and Nos. VII and XV, at seven and fifteen feet, respectively. Diamond type should be read at a distance of twenty inches from the eye. Pearl should be easily read at thirty, and minion at forty inches. When the letters or sentences can be easily read at the proper distance at first, but afterward cannot be made out without occasioning a tired feeling of the eyes, the indication is weakness of vision. When the test letters cannot be made out at any distance, there is almost entire loss of sight, probably the result of disease.

TEST TYPES.

I.

NPRTVZBDFKO1.

II.

PHKOSUYACEGL.

III.

CECLNPRTVZBD.

IV.

VZBDFHKOSUYA4.

VII.

FHKOSUYACEGL7.

XV.

PRBDHKO15.

DIAMOND.

Should be read at twenty inches.

Our Father which art in Heaven, hallowed be thy name. Thy kingdom come. Thy will be done in earth as it is in Heaven. Give us this day our daily bread, and forgive us our debts as we forgive our debtors. And lead us not into temptation, but deliver us from evil for thine is the kingdom, and the power, and the glory, forever. Amen.

PEARL.

Should be read at thirty inches.

Our Father which art in Heaven, hallowed be thy name. Thy kingdom come. Thy will be done in earth as it is in Heaven. Give us this day our daily bread, and forgive us our debts as we forgive our debtors. And lead us not into temptation, but deliver us from evil; for thine is the kingdom, and the power, and the glory, forever. Amen.

MINION.

Should be read at forty inches.

Our Father which art in Heaven, hallowed be thy name. Thy kingdom come. Thy will be done in earth as it is in Heaven. Give us this day our daily bread, and forgive us our debts as we forgive our debtors. And lead us not into temptation, but deliver us from evil, for thine

BOURGEOIS.

Should be read at fifty inches.

Our Father which art in Heaven, hallowed be thy name. Thy kingdom come. Thy will be done on earth as it is in Heaven. Give us this day our daily bread, and forgive us our debts as we forgive our debtors. And lead us not into tempta-

Old-Sight—Presbyopia.—In old age the power of accommodation of the eye is diminished. The ciliary muscle becomes weakened, so that it loses its ability to increase the thickness of the crystalline lens by compression. The result of this change is that the individual is unable to see near objects as well as formerly. In reading, he is obliged to hold his book or paper farther away from the eye than usual. Objects at a distance are seen as before, the difficulty being only observed with reference to near objects. By placing a convex lens, Fig. 450, before the eye, the deficient power of the crystalline lens is compensated for, and the patient can see near objects without difficulty, but is obliged to remove the glasses when viewing distant objects. By some means, the process known as accommodation, by which the eye is adapted to view objects at different distances, which the eye becomes incapable of performing in old age, may be imitated by the use of artificial lenses. Old people who are able to see without glasses, generally have an unnaturally long eyeball, in consequence of which their far-sight is deficient, although they may have excellent vision for near objects. Old people are sometimes agreeably surprised by finding themselves able to read without glasses after they have been obliged to use them for many years. This is what is know as *second sight*, which results in a change of the cornea by which the eye is made short-sighted.

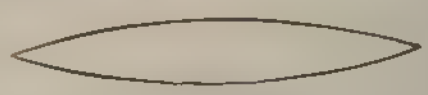


Fig. 450. Convex Lens.

As age advances, the eye should be occasionally tested, especially if the individual finds that the eyes are tired more readily than usual by reading or use in fine work. Upon testing with the test types, if he finds that diamond type is most easily read at more than twenty inches from the eye, while number I can readily be made out only at a distance of fifteen or sixteen inches, he may be sure that his eyes are becoming presbyopic, and that proper glasses should be adjusted. It is a mistake to suppose that old-sighted persons can see better at a distance than persons with natural vision; hence the term far-sighted, as applied to persons suffering with presbyopia, is incorrect. Old-sighted people see better at a distance than near by, but no better than those whose eyes are perfectly normal. Short-sighted persons do not generally require the aid of glasses nearly as soon as others, often in fact, getting along without them altogether.

Long-Sight Hyperopia. This is a condition in which the eyeball is too short, as shown in Fig. 451 Persons whose eyes are in this

condition usually suffer with great fatigue after a long use of the eye, generally with slight pain or heavy feeling in the forehead. When reading at night, the print soon becomes blurred. After resting the eyes awhile by closing them, or by rubbing or bathing them, the reading may be continued, but the eyes soon become again fatigued. In some cases the individual is utterly unable to read fine print at any distance, and is also unable to see clearly objects some distance away. Persons suffering in this way were formerly considered incurable; but it is now very well known that the defect is easily corrected by means of convex glasses, such as are used for old-sight. The discovery of this fact was made accidentally, after thousands of individuals had been compelled to go through life with continual suffering, under the idea that the weakness of sight was due to commencing blindness, which would be greatly intensified by wearing glasses of any sort. In former times, if a long-sighted child happened to discover that he could read more easily with his grandmother's spectacles, they were quickly snatched away from him, as though they were a dangerous weapon in his hands.

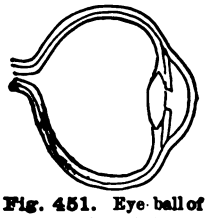


Fig. 451. Eye-ball of Long-sighted Eye.

Short-Sight—Myopia.—In this disease, the condition of the eyeball is the opposite of that in long-sight; that is, the eyeball is too long. Fig. 452. The tendency to short-sight in some cases exists at birth. In a great majority of cases, however, it is the result of improper use of the eyes. It is particularly frequent among students and literary people, which is probably due to the sedentary habits of this class of persons, and especially the habit of using the eyes much in close work. The disease is very prevalent in Germany, so much so that the government has found it necessary to allow the use of glasses among soldiers. It is very rare indeed among farmers, sailors, and common laborers. Among savages it is still more rare, if not unknown. An eminent oculist of Breslau, some years ago examined the eyes of over ten thousand school children, with the result of discovering that short-sight increases in students with the length of time the person is in school. In the elementary school, 6.7 per cent of the students were found to be short-sighted. In the next higher grade, the percentage

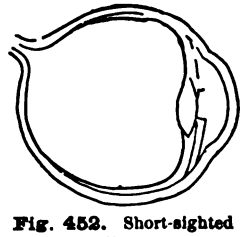


Fig. 452. Short-sighted Eye.

was 10.3. In the high school, about one in every five suffered with myopia, and in the universities or colleges, more than one in every four was so affected. In the high school, nearly one-half of the first class were found to be short-sighted. Examinations made in this country have developed similar facts. The idea sometimes entertained that the short-sighted eye is a strong eye, is a mistake. As a general rule, short-sight is an evidence of unsoundness and disease, which may result in most serious consequences to the sight, possibly ending in its destruction. Short-sight does not, as many people suppose diminish with age. Although a person may become able to see near objects better than in youth, distant objects do not become more distinct.

Fig. 453 Bi-Concave Lens.

Short-sight may be relieved by the use of concave lenses, Fig. 453 placed before the eye, by means of which the error in vision arising in consequence of too great length of the eyeball may be corrected. Persons with short-sight generally do not need glasses in reading, unless they are obliged to hold print very near to the eye, but are wholly dependent upon properly fitted glasses for vision at a distance. Wearing of properly fitted glasses is an advantage rather than a detriment to short-sighted eyes, but care should be taken to secure an accurate adjustment of the glasses to the eye. This can only be done by a competent physician who has given his attention to the subject. In addition to the fitting of proper glasses, attention should be given to the general health, and to careful removal of all causes of this condition.

Astigmatism.—This is a condition of the eye in which the curve of the cornea is not symmetrical, or uniform. The consequences of this condition are much more serious than those resulting from long or short-sightedness. Nearly all objects are seen distorted. The most perfect eye is not absolutely symmetrical, and when the want of symmetry is more or less increased, the eye becomes astigmatic. A person suffering with this affection of the eye can easily see horizontal lines more distinctly than vertical ones, though sometimes the reverse is the case. This condition may be detected by means of the test diagram, Fig 454. If this is held a distance from the eye and gradually brought near to

it, it will be discovered that either the horizontal or the vertical lines indistinct. In some cases, this is true of the oblique lines, instead of the vertical or horizontal.

Astigmatism, like long-sight and short-sight, but in a much greater degree, has a considerable effect upon the character. Persons who are born with this defect never know the proper forms of objects until the defect is corrected by the proper glasses. We have now under treatment a lady who never knew the form of the human face until a pair of glasses were fitted to her eyes. The change in the appearance of objects was so great that she at first was unable to recognize her husband without taking off her glasses. She expressed the most exquisite delight at the improved appearance of various objects which she beheld for the first time in their proper form. Astigmatism is corrected by means of glasses ground from a cylinder in such a way as to overcome the optical defects of the eye.

Fig. 454.
Test for Astigmatism.

Glasses.—Proper glasses should be selected and carefully fitted to the eyes whenever they are affected by old-sight, long-sight, short-sight, or astigmatism. A competent physician or an oculist should be consulted in every case with reference to the wearing of spectacles, and their adaptation to the eye. Spectacle venders who travel about the country should not be patronized under any circumstances. Glasses made of flint glass, or of what is known as rock crystal or Brazilian quartz, are the best. The last variety is known as "pebble" glass. The only advantage which it has over other glasses is its hardness. Spectacles should also be perfectly clear and free from irregularities in the glass.

It is sometimes advantageous to wear glasses for the purpose of protecting the eye from mechanical injury, when they are much exposed, as in certain trades. Colored glasses, as London smoke, green or blue glasses, are also necessary in many cases to protect the eye from intense light. Protection of this sort is very necessary for travelers in snowy regions, whose eyes are likely to suffer from the

dazzling brightness of the reflected sunlight, producing an affection known as snow blindness. For the convenience of persons who are obliged to use two sets of glasses, one for viewing near objects, the other for distant vision, spectacles are sometimes made in which the lower part of the lenses is ground so as to be adapted to near vision, while the upper part is adapted to distant vision. These are known as Franklin glasses because they were invented and first used by Benjamin Franklin. The kind of frame to be employed is wholly a matter of taste.

Color-Blindness. This is an affection known as Daltonism, from the man who first described it, and is more common than is generally supposed. Persons suffering with this difficulty are unable to distinguish red, green, or other colors. In some cases, only the form of objects are discerned, all appearing of the same color. The affection is much more common in men than in women. Great harm may result from this defect, which exists in this country to the extent of about forty per cent of the whole male population. It is especially dangerous in persons employed as pilots or engineers of railroad trains. It is an interesting fact worthy of notice that the color which the patient is unable to discern appears to him to be gray. It is probable that color blindness is in part, at least, due to the want of proper education of the eye in discriminating colors in early childhood. The defect is in many cases hereditary. It has been recently announced that color-blindness may be corrected by means of a pair of spectacles composed of two plates of glass between which is placed a thin layer of *fuchsine*.

DISEASES OF THE EAR.

Discharge from the Ear.—When a discharge from the ear is not accompanied by any marked interference with hearing, it is probably the result of an abscess in the auditory canal. When preceded by severe earache, and accompanied by marked deafness, and when of very long standing, the discharge probably comes from the middle ear, in which the process of suppuration is taking place.

Treatment.—Syringe the ear thoroughly one to three times a day, according to the amount of discharge, employing tepid water with the syphon or fountain syringe. Care should be taken not to use too great force, as the membrane of the ear may be ruptured. The ear

should be drawn upward and backward, and the nozzle of the syringe should be introduced about one-fourth of an inch. If the discharge is very offensive, a carbolic acid lotion in the proportion of five drops to the ounce, or a solution of permanganate of potash, twenty grains to the pint, should be employed.

Abscesses in the Auditory Canal.—Small boils, or furuncles, sometimes form in the walls of the auditory canal, giving rise to impairment of hearing. They seldom occasion roaring in the ears, which is a symptom met with in nearly all other diseases of the ear.

Treatment.—Apply hot fomentations and the hot ear douche, and lance as soon as possible, continuing the hot douche afterward as before. The vapor douche is an excellent means of treatment when it can be employed. A cotton plug saturated with glycerine and placed in the ear will often give great relief. The ear should be carefully protected from cold air, especially when out of doors. Attention should also be given to the general health, which is always more or less impaired in these cases.

Earache.—This is by no means so trivial an affection as is generally supposed. Pain accompanied by roaring or ringing sounds and a sense of fullness, is generally due to inflammation of the middle ear, which may result in permanent impairment of hearing if not given proper attention. In many cases, obstinate crying of children is due to earache. Earache is sometimes sympathetic with disease of the teeth. The most common cause, however, is taking cold in the head or ears.

Treatment.—The best remedy is heat, which may be applied by means of fomentations, rubber bags filled with hot water, flannel bags filled with hot sand, bran or corn meal, or poultices. Whatever the applications are, they should be made as hot as can be borne. It is usually necessary to continue the applications for some time. In most cases, it is advantageous to employ fomentations of sufficient size to cover the whole side of the head and extend under the chin. The application of a roast onion to the ear is a very favorite remedy, but probably has no advantage over fomentations. The application of the hot douche to the ear is a very excellent remedy if used with care. The water should be as hot as can be borne. The hot foot bath, hot sitz bath, and the hot blanket pack, are often effective in relieving pain in the ear. They should be employed in connection with local treatment.

Hardened Ear-Wax.—Hardening of the cerumen, or ear-wax, is a not very infrequent cause of deafness, and is by no means so harmless a condition as is generally supposed. In many cases the hardening is not the primary disease, but is due to chronic inflammation of the middle ear. The most prominent symptoms of this condition are, impairment of hearing, roaring and pain in the ears. The practice of probing the ear for the purpose of ascertaining whether it contains hardened ear-wax is a very hazardous one, as it may excite inflammation of the canal of the ear, or even rupture the drum. Cleaning the ears with the end of a towel, or with a bit of sponge attached to a handle, is a bad practice, as the wax is crowded in. The wax sometimes becomes almost as hard as stone.

Treatment.—Hardened wax may be readily removed, in most cases, by the ear douche with warm, or hot water. In case the wax is very hard, it may be necessary to use quite strong soap-suds, or to place in the ear a few drops of a strong solution of bi-carbonate of soda. A good plan in these cases is to drop into the ear while the head is bent over, a small lump of bi-carbonate of soda, which can be easily pressed down in contact with the wax, after which a few drops of water should be added. Persons subject to hardening of the ear-wax should syringe the ears thoroughly every six or eight weeks. The proper treatment for other foreign bodies in the ear has been given elsewhere. See page 1439.

Ringing in the Ears—Tinnitus Aurium.—Under this head is included all cases in which there are unnatural sounds in the ear The description of these sounds given by different patients is exceedingly varied. Some complain of sounds resembling the roaring of a waterfall, the rumbling of a carriage in the street, or a train of cars etc ; while others are continually troubled with a snapping, crackling sound, and similar disturbances. This affection is often a very annoying one, sometimes resisting all remedies. Among the principal causes are hardened ear-wax, foreign bodies in the auditory canal in contact with the drum membrane, inflammation of the middle ear, etc. The most obstinate cases are probably due to disease of the nerve of hearing.

Treatment.—Hardened wax, or other foreign bodies, should be removed. When resulting from congestion, relief is sometimes obtained by pressure upon the large arteries of the neck. Electricity has also

proved of great service in some cases, though in others it has not succeeded. The galvanic current is the most successful.

Parasitic Inflammation of the Auditory Canal.—The external end of the canal is sometimes subject to inflammation in consequence of the growth of vegetable parasites of the nature of mold. The most common is some variety of the aspergillius. The principal symptoms are pain, dizziness, impairment of hearing, and a discharge from the ear.

Treatment.—The same treatment should be employed as has been recommended for the preceding disease. The persistent use of hot water will thoroughly destroy the parasites, but the discharge will still continue, in some cases, requiring the treatment recommended for discharge from the ear.

Acute Catarrh of the Ear.—This is an inflammation of the middle ear. It is the principal cause of earache. It occurs at all periods of life, but is especially common in young persons. The most frequent cause is taking cold in the head, or in the ears. When frequently repeated, it may lead to chronic catarrh and permanent impairment of hearing. Prolonged bathing, especially in cool weather, or ducking the head under water, is a frequent cause of catarrh of the ear. Prof. Roosa, an eminent aurist, also asserts that the use of tea and coffee, pastry, and other improper articles of diet, is a frequent cause of this disease.

Treatment.—The treatment of acute catarrh of the middle ear is a matter of great importance for the reason just given. If prompt, energetic measures are not employed, the drum membrane is not infrequently perforated by ulceration. This is not an accident fatal to hearing, however, as openings of this kind generally heal quite readily with proper treatment. Essentially the same treatment should be employed as has been recommended for earache, the most useful being fomentations and the hot ear douche. Simply breathing into the ear for a few minutes will sometimes check the disease in children. Pouring into the ear sweet oil, glycerine, molasses, laudanum, cologne water, etc., is not only useless, but in many cases harmful. There is also danger from the use of poultices if too long employed. Fomentations should be applied to the throat as well as to the ear. In severe cases, when a considerable amount of suppuration occurs, it is sometimes necessary to employ a competent surgeon to lance the drum membrane so as to allow the accumulated fluid to escape. As soon as the symp-

toms have disappeared, the ear should be inflated by grasping the nose so as to close the nostrils tightly, closing the mouth and then attempting to blow through the nostrils. By this maneuver, air will be forced up into the ears, and in many cases, the impairment of hearing will be at once relieved to a considerable degree, if not altogether. In cases of children who are unable to perform the experiment, the ears may be inflated by putting into the nostril one end of a piece of rubber tubing through which the mother or nurse should blow, while the mouth and other nostril of the infant are tightly closed. When the soreness and swelling have passed away, the ear should be carefully tested to determine whether or not the hearing is seriously impaired. Persons subject to inflammation of the middle ear should be very careful not to expose themselves to taking cold in any way. Special pains should be taken to protect the ears from exposure to drafts of cold air. In the majority of cases, complete recovery takes place.

Chronic Catarrh of the Middle Ear.—This is a very serious affection of the ear, and one to which about one-half of all cases of deafness are due. The disease is generally accompanied by slight pain, heat, and uneasiness about the ear. It is often the result of repeated attacks of acute catarrh of the middle ear. In a majority of cases it results from long-continued nasal and pharyngeal catarrh. Patients frequently complain of sounds in the ear, like the crackling of air bubbles. There is generally more or less ringing in the ears and a sense of fullness. Dizziness is also a not infrequent symptom. In many cases there is a tendency to an accumulation and hardening of the ear-wax. Generally, also, a slight tenderness will be found by pressing with the finger in the hollow just below the ear, or over the front part of the ear. In some persons, however, scarcely any symptoms except those of impaired hearing are present. In not a few instances the disease progresses so insidiously that the patient is unaware of his condition until his hearing is destroyed. On the day of this present writing, we have met with two illustrations of this fact. A clergyman called at our private office, and with much concern apprised us of the fact that he had just made the discovery that the hearing of his right ear was very greatly impaired. His attention was called to the fact by incidentally placing a watch to his ear to see if it was running. On testing the ear, we found that it possessed only one sixteenth of its natural acuteness, and upon examination of the left ear, we found, very much to the gentleman's surprise, that its hearing was also very greatly impaired,

the watch which should have been heard at a distance of four feet being barely made out at a distance of a foot. Within an hour, while examining a patient from a distant State with reference to the condition of his general health, we incidentally tested his hearing, although he remarked very emphatically that his ears were perfectly sound. In this case, we found the left ear had lost fully three-fourths of its acuteness, while the hearing of the right ear was almost entirely destroyed. The gentleman was so greatly astonished at the result of the examination that he was only convinced of his real condition after the test had been repeated several times.

A curious phenomenon is sometimes observed by persons suffering with chronic catarrh of the ear. When surrounded with loud noises, as riding in a railroad car, they are able to hear as well as, or even better than, persons whose ears are perfectly healthy, although very deaf at other times. The cause of this improvement of hearing is not well understood, but it has been thought that it may be due to the fact that

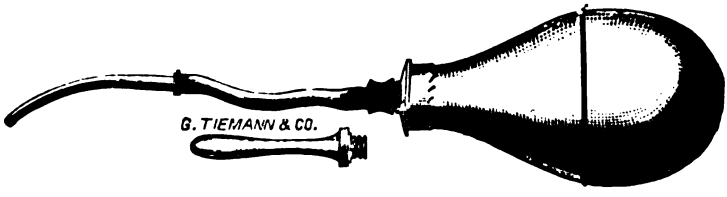


Fig. 455. Politzer's Rubber Bag.

the powerful vibrations produced by loud noises set in motion the membrane of the ear, which is thickened and rendered rigid by disease. An English physician, taking a hint from this fact, has suggested the exposure of the ear to loud noises as a mode of treatment. This plan of treatment has been termed ear gymnastics.

In order to ascertain whether the Eustachian canal is open and the membrane moveable, it is necessary to inflate the ear. This is done by forcing air into it by means of Valsalva's method, which consists in attempting to blow the nose while the nostrils are tightly closed with the thumb and finger, or still better, by Politzer's method, in which air is forced into one nostril by means of a rubber bag, Fig. 455, the patient swallowing at the same moment that the air is forced into one nostril, the other being closed. In cases in which the air cannot be made to enter the ear by either of these methods, it is necessary to use the Eustachian catheter, Fig. 456. When air enters the ear, the movement

of the structures of the middle ear can be distinctly heard by means of the otoscope, or diagnostic tube, Fig. 457, one end of which is placed in the ear of the examiner, and the other in the ear of the patient undergoing examination. These instruments are also very essential in the treatment of many diseases of the ear.

Treatment.—Unfortunately, in the majority of cases of chronic catarrh of the middle ear, little can be done to improve the hearing of the patient. About the best that can be hoped for is to check the progress of the disease, and perhaps secure a little improvement. The

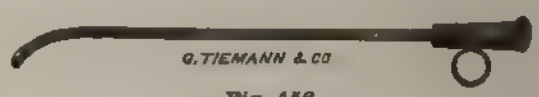


Fig. 456.

Fig. 457.

first attention should be given to the throat, which will in nearly all cases be found to be the seat of chronic catarrh, though in many cases there is also nasal catarrh. For the relief of these difficulties, the treatment elsewhere recommended for them should be adopted and thoroughly employed, not for a few weeks only, but persistently for months and years.

Among the various measures for this purpose, are the post-nasal douche, steam inhalation, and gargles. The best remedy for the use of the gargle is chlorate of potash, a strong solution of which should be used two or three times a day. The usual method of employing the gargle is very ineffective, as the soft palate prevents the solution from reaching the seat of the disease. In order to be of any service, the gargle should be taken as follows: Take into the mouth about a tablespoonful of the solution, throw the head backward as far as possible, close the nostrils, and make the motions of swallowing without,

however, allowing the liquid to pass into the stomach. By this means the solution may be made to pass up into the back part of the throat over the diseased surface.

Alternate hot and cold applications made to the throat and over the ears, are valuable means of aiding a cure. Electricity may also be applied to the ears with advantage in many cases. When the external canal of the ear is dry and irritable, much relief may often be given the patient by anointing it with carbolated vaseline, ten drops to the ounce, sweet oil, or almost any other unguent. Great care should be observed to avoid taking cold. In cases in which the tonsils are enlarged, which are by no means rare, they should be removed. Attention should be given to the general health, as in many instances the hearing may be greatly benefited by improvement of the condition of the stomach.

Nervous Deafness.—This is one of the most hopeless of all diseases of the ear. It is by no means so common, however, as formerly supposed, before diseases of the ear were as well understood as at present. Formerly, all diseases of the ear which could not be traced to other causes were attributed to disease of the auditory nerve. Even at the present time many physicians who are not thoroughly posted in regard to diseases of these organs pronounce many cases of deafness to be of nervous origin, when the difficulty is of a much more tractable character.

One of the most interesting discoveries appertaining to this class of maladies is the fact that diseases of the auditory nerve can be distinguished from diseases of other portions of the ear by means of the tuning-fork. If the tuning-fork be sounded, and the handle placed at the center of the forehead, the sound will be heard most distinctly in the affected ear if the deafness is in the middle ear, or due to hardened ear-wax. If, however, it is due to disease of the auditory nerve, it will be heard most distinctly in the unaffected ear.

Treatment.—Improvement of the general health, and the application of galvanic electricity to the ear, are about the only measures of advantage. When both ears are affected, the electricity may be applied by means of small sponge electrodes which should be placed at the openings of the auditory canal, or just behind the ear. When only one ear is affected, the positive pole should be placed at the back of the head and the negative at the opening of the ear or upon the prominence just behind it.

Rupture or Perforation of the Membrane of the Ear may result from exposure of the ear to loud sounds, as the firing of a cannon, or a violent explosion of any kind, or perforation may occur by puncturing with an instrument used in removing wax from the ear, or accidentally introduced into the auditory canal, or by ulceration as a result of suppuration of the middle ear. Cases of rupture of the membrane have also been known to occur in consequence of the injudicious use of the nasal douche. Rupture of the membrane has also been caused by boxing the ears, or by a blow upon the ear from a snow-ball. The accident generally causes loud buzzing in the ear and confusion in the head. In many cases the ear whistles when the patient blows his nose, due to the passage of air through it. The condition of the drum membrane is easily ascertained by an examination by means of the ear speculum, of which two forms are shown in Figs. 458 and 459. Light is thrown upon the membrane through the speculum by means of the concave mirror, such as is used in examining the throat. Fig. 296.

Fig. 458. Ear Speculæ of three sizes.

Fig. 459. A Bivalve Ear Speculum.

Treatment.—The pain may be relieved by fomentations. If inflammation occurs, hot douches to the ear should be employed, but not otherwise. In a majority of cases, rupture of the membrane heals quite readily, especially when it is the result of puncture with a sharp body, as a knitting-needle.

Ear Trumpets.—Quite a variety of instruments have been invented for the purpose of intensifying sound for the benefit of those who are hard of hearing, in cases in which the middle ear is the seat of the disease, the auditory nerve remaining intact. Two of the most useful instruments are shown in Figs. 460 and 461. Auricles, Fig. 462,

are of rather doubtful value. The conversation tube, Fig. 463, is a very serviceable instrument. Fig. 464 shows at *a* and *b*, small silver cornets, which are recommended on account of the ease with which they can be concealed. They are, however, of little value as aids to hearing. Some years ago the discovery was made that a small bit of moist cotton in the ear adds greatly to the hearing power when the drum membrane is ruptured. Artificial drum membranes, Fig. 465 are now made and are often very serviceable, in some cases, though all are not benefited by them.

Fig. 460. Dipper Trumpet.

Fig. 461. Ear Trumpet.

Fig. 463. Conversation Tube.

Fig. 462. Auricles.

a *b*

Fig. 464. Small Silver Cornets.

c

Fig. 465. Artificial Drum Membrane.

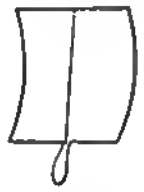


Fig. 466. The Audiphone.

The audiphone, Fig. 466, is a recent invention, which is of service in some cases of deafness, though it is by no means so universally applicable as has been claimed by its inventor. It is composed of a sheet of gutta-percha attached to a handle and made tense by means of a cord. In use, the upper edge is placed against the front teeth, through which the vibrations of sound are communicated to the bones of the

skull and to the auditory apparatus. The principal objection is its price, which is very exorbitant when compared with its actual cost. A sheet of card-board eight or ten inches square may be used in the same way as the audiphone. The dentaphone is practically the same as the audiphone, the only difference being that it may be folded so as to be convenient to carry in the pocket. The megaphone, an instrument by which very distant sounds may be distinctly heard when wholly imperceptible to the unaided ear, is one of the numerous inventions of Mr Thos. A. Edison. The instrument constructed by him, the marvelous powers of which were exhibited to us by his laboratory assistant, is of such mammoth proportions as to be of no particular value for the relief of deafness. It is quite doubtful whether it can be sufficiently reduced in size to be of any value for this purpose.

Deaf-Mutism.—Persons who are deaf and dumb are generally unable to speak in consequence of being unable to hear, which prevents their learning the significance of vocal sounds, although the vocal apparatus may be perfectly developed. Persons may be born deaf in consequence of imperfect development of the organs of hearing, or of disease of the ear previous to birth. In many cases, deafness is the result of diseases occurring in infancy or early childhood. It is not necessary that hearing should be entirely destroyed to produce deaf-mutism, as a considerable degree of impairment of hearing will often prevent a child from making the necessary attempts to learn to speak. It is thought that the marriage of persons nearly related, is a frequent cause of deaf-mutism, as it has been supposed to be of idiocy.

Treatment.—Although in these cases there is no call for treatment for the purpose of restoring the hearing, there is an imperative necessity for the employment of proper measures by means of which the condition of these unfortunate individuals may be ameliorated. The experience of numerous deaf and dumb asylums in this and other countries has shown beyond question that deaf mutes are capable of a high degree of mental culture and such a course of training as will render them able to compete with their more fortunate fellows in the various departments of life. Educated mutes are able to communicate readily with each other by means of the "sign language," a sort of natural mode of speech which is in common use among the North American Indians and other savage tribes. Attention was first called to this mode of mute speech through its use by two deaf mute sisters.

DEAF AND DUMB ALPHABET.


467. A


468. B


469. C


470. D


471. E


472. F


473. G


474. H


475. I


476. J


477. K


478. L


479. M


480. N


481. O


482. P


483. Q


484. R


485. S


486. T


487. U


488. V

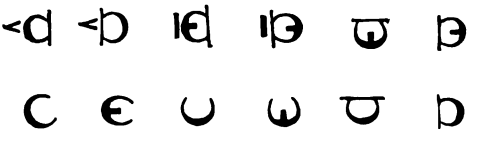

489. W


490. X


491. Y


492. Z


493. &


494. VISIBLE SPEECH.

It has been improved and perfected, until it admits of great fluency of expression and is capable of expressing ideas with sufficient rapidity to follow very closely an ordinary speaker. Educated mutes usually make use, to a greater or less extent, of the manual alphabet, page 1517, by means of which words may be readily spelled out. The greatest advance in the instruction of the deaf and dumb, has been through the discovery that mutes can be taught to understand spoken language by carefully watching the movements of the lips and throat, and can also become able to speak by imitating the movements by which various sounds are produced. This is known as the "German method." A successful attempt has been made to illustrate the various sounds of speech by means of symbols termed "visible speech," a few illustrations of which are given in Fig. 494.

TUMORS.

Of the great variety of tumors to which the human body is subject, the great majority are of a benign character, although the great number of cancer doctors, with whom the country is infested, and who attach the name of cancer to every morbid growth no matter how simple and harmless its character, have given rise to such a widespread misapprehension upon this subject that the term tumor is in the minds of most people almost synonymous with cancer or malignant disease. Tumors of this class may consist of fibrous, mucous, fatty, osseous, cartilaginous, muscular, or vascular tissue. They produce no symptoms except those which arise from pressure or weight.

Fibrous Tumors.—These growths are quite firm in character and slow in growth. They are found more often in the uterus than in any other organ. They also occur in the skin, in the throat, in the nasal cavity, in the globe of the ear, and in other parts of the body. They not infrequently contain sacs which are filled with fluid. The proper treatment is removal when the growth occurs in such a location as to be productive of inconvenience or a source of interference with the function of any organ of the body.

Fatty Tumors.—These are more common than any other variety of tumor. They generally grow very slowly, and sometimes attain to very great size. They are formed by an increased growth of fatty tissue. They are distinguished from fibrous tumors by being less firm in character. They have a peculiar doughy feeling. Treatment con-

sists in removal when the tumor becomes so large as to occasion serious inconvenience.

Cartilaginous Tumors.—These tumors are much less frequent than the preceding. They most frequently occur upon the joints of the fingers and the toes. They have a marked tendency to degenerate into malignant growths, and hence should be removed as soon as distinctly recognized.

Bony Tumors.—These growths are sometimes composed of bony tissue alone, at other times a mixture of bony and cartilaginous tissue. In still other cases, they consist largely of fibrous tissue. They are sometimes quite well defined in shape, and in other cases are more diffused. The most common form of bony tumor is that known as sarcoma, which is closely allied to cancer.

Treatment.—In cases in which it can be clearly determined that the tumor is a sarcoma, the proper treatment is amputation of the limb as far above the disease as possible.

Cystic Tumors.—Cystic tumors consist of cystic growths, which are generally filled with fatty matter of a cheesy consistency, or serum. The most common is that known as "wen," which most frequently occurs upon the scalp. Proper treatment is division of the cyst with a knife, and removal of the sac.

Horny Tumors.—These growths are of very infrequent occurrence. They occur most often upon the head and have been observed upon the tip of the nose. They are readily cured by removal.

Cancer.—This formidable malady, though at first of a local character, sooner or later involves the whole system through absorption of what is known as the cancer juice, or the broken down elements of the growth. There are several varieties of cancerous or malignant growths. Its most frequent location is the breast. It occurs most often between the ages of thirty and fifty, though it occasionally appears at a much earlier or a much later age. The variety of the disease popularly known as *stone* cancer, so-called on account of its excessive hardness, is the most common. After ulceration has taken place, the term *rose* cancer is frequently applied. *Black* cancer is a form of the affection in which there is a great increase of coloring matter, producing a dark color.

Epithelioma is the proper name of what is ordinarily known as "*skin* cancer." Cancer may occur in any part of the body. It is gen-

erally accompanied by pain, and sooner or later, by severe ulceration.

Among the causes of cancer, probably local irritation, as of the tongue and lips from a pipe and tobacco smoke, is the most active. Irritation of the tongue from a decayed tooth has also occasioned cancerous disease in that organ.

Treatment.—There is no internal remedy which exercises any curative influence over this disease, neither is there any remedy which by external application will cause the cancer to be absorbed or disappear. The only remedy is removal of the diseased parts, which should be accomplished as thoroughly and quickly as possible after its character has been discovered. This may be accomplished by means of caustics of various kinds, or by the knife. The latter method is generally to be preferred as the most thorough and effective. We have used both methods in the treatment of cancer, and unhesitatingly pronounce the latter as the most superior in the great majority of cases. Frequent freezing of a malignant growth, and constantly wearing upon it an ice bag or compress, are means of delaying the progress of the affection.

MISCELLANEOUS SURGICAL DISEASES AND OPERATIONS.

Ligation of Blood-Vessels.—This is an operation which is generally performed by the surgeon, but which almost any person may be called upon to perform in an emergency. The operation consists in

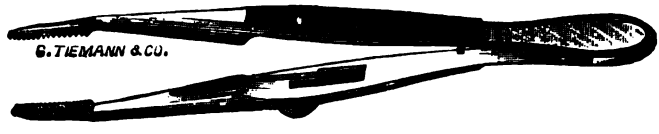


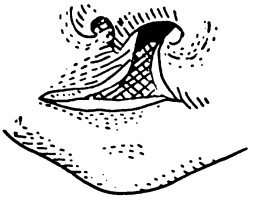
Fig. 495. Artery Forceps.

seizing the end of the bleeding vessel with a pair of forceps, Fig. 495, and tying the artery with a ligature of silk or some other strong material. Catgut, horse-hair, silver and iron wire, and other similar substances are employed for this purpose. Silk ligatures are quite irritating in character, and consequently soon come away by ulceration. When the wound must be closed immediately, catgut ligatures are employed, which are after a time absorbed, so that no further attention need be given them.

The operation of torsion, which consists in twisting the end of the severed artery, is now often employed instead of the ligature.

Hare-Lip.—This deformity results from failure of the bones of the two sides of the face to unite in the process of development. When the difficulty occurs upon one side alone, the patient has single hare-lip. When it occurs upon both sides, the deformity is double. The appearance of this deformity in its different phases is well shown in Figs. 496 to 498. The difficulty seems to be hereditary in some families. It occurs most often in males.

The only remedy is a surgical operation, which consists in paring the edges of the cleft



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498.

on each side and bringing them together with proper sutures. The operation is generally a very successful one. It should be performed, by preference, sometime between the third month and the period of teething.

Cleft Palate.—This difficulty may exist either alone or in connection with hare-lip, being also the result of defective development. The cleft may involve simply the uvula, or hanging part of the soft palate, or may extend through the whole roof of the mouth. A person suffering with an extensive cleft of the palate, has a peculiar nasal tone of voice and great indistinctness of articulation.

The treatment consists in closure of the cleft by a surgical operation. As a general rule, the operation is by no means so successful as in hare-lip. The art of dentistry presents a much more perfect remedy in an artificial hard palate to close the roof of the mouth, to which is attached, at the back end, an artificial soft palate composed of rubber.

Restoration of the Nose.—This is one of the nicest operations in mechanical surgery, and, when successfully performed, results in the removal of a hideous deformity, as the human face can hardly be more terribly disfigured than by the removal of the nose, either as the result of accident or disease. The operation consists in transplanting portions of skin from the forehead.

Polypus of the Nose.—There are two kinds of polypi found in the nasal cavity, *mucous*, and *fibrous*. The mucous polypus is by far the most common. It has a soft consistency, is of a pale yellowish gray, or slightly greenish color, of a shiny and somewhat translucent appearance. These polypi may occur singly, or multiple. They generally produce a sense of fullness and weight in the affected nostril, which may become so much obstructed as to interfere with the respiration and affect the voice. The greatest difficulty is always experienced during damp weather.

The treatment consists in removal by means of a pair of forceps. The growth should be grasped near its root and forcibly torn from its attachment. Fibrous tumors, when small or young, may be treated in the same way. They sometimes, however, become so large as to require a much more serious surgical operation.

Elongated Uvula. When the uvula becomes greatly elongated, as is sometimes the case, it becomes necessary to remove a portion of it. This is done by grasping the end of the organ with a pair of forceps and snipping off one-half or two-thirds of its length.

Alveolar Abscess—Ulcerated Teeth—Gum-boil.—This consists in the formation of an abscess at the root of a tooth. It is generally the result of decomposition of a dead nerve or of the pulp of a tooth. The first symptoms felt are soreness of the affected tooth, which feels longer than natural. After a few hours, severe pain begins, which continues four or five days, after which, a swelling upon the gum near the tooth may be discovered, which in time, if left to itself, breaks and discharges. If not properly treated, the abscess may continue to gather and break for a long time. Proper treatment consists in cold applications to the side of the face, holding ice, or iced-water in the mouth in order to limit the inflammation as much as possible, and lancing of the abscess when it is formed. A skillful dentist should be employed to treat the teeth.

Salivary Calculus—Tartar.—This is an incrustation which is formed upon the teeth, chiefly on the inner portions, through decomposition of the saliva. It varies in color from whitish yellow to a dark brown, and even green. When tartar is allowed to accumulate in large quantities, it often causes absorption of the gums, so that the teeth become loosened and their utility greatly lessened. A person suffering with tartar upon the teeth, generally has bad breath. The tartar should be thoroughly removed from the teeth by a competent

dentist, and the teeth should be kept entirely free from any deposit of this sort by means of daily cleansing and thorough brushing. The teeth may be greatly injured by neglect of this precaution.

Decay of the Teeth.—Decay, or caries of the teeth, is an exceedingly common affection. It is generally produced by decomposition of portions of food left between the teeth, which undergo decomposition, developing lactic acid, which has the power to dissolve the enamel. When the teeth are only slightly diseased, and even when quite badly affected with caries, much good may be done by having the teeth properly filled by a competent dentist. When the teeth become so bad that filling is out of the question or useless, it may become necessary to have them drawn. The teeth should be saved whenever it is possible to do so. It is rarely necessary to use an anæsthetic in drawing teeth, though nitrous oxide is much used for this purpose. A recently proposed substitute for anæsthetics in these cases is rapid breathing. In employing this method, the patient should breathe about one hundred times a minute, keeping up the respiration during the whole operation.

Tongue-Tie.—This is an affection in which the frænum of the tongue extends too far forward. The remedy is simply division of the superabundant tissue, care being taken to avoid cutting the arteries of the tongue.

Removal of the Tongue.—This is an operation sometimes necessitated by cancer. In a number of cases in which the operation has been performed, the surprising effect has been observed that there was not loss of speech; at any rate, the power of speech was usually recovered by practice, and became nearly as perfect as when the tongue was present.

Ranula.—This consists in a cyst beneath the tongue which is formed by obstruction of the salivary duct. The treatment is incision of the cyst, and in bad cases, removal of a portion of its walls.

Tracheotomy.—This operation consists in making an opening into the trachea, into which is inserted a silver tube, through which the patient may breathe. When the opening is made into the larynx, the operation is known as *laryngotomy.* The operation is performed in cases in which there is serious obstruction in the upper part of the trachea or larnyx.

Goiter, or Bronchocele.—This disease consists in an enlargement of the thyroid gland. When of recent standing, it can generally be cured by improvement of the general health, hot and cold applications to the throat daily, the local application of the faradic current strongly interrupted, and the application of uniform pressure. Galvanic electricity is also useful in some cases. In old cases, electrical puncture has been employed with some success, and passing a ligature through the tumor is highly recommended by some. In a few cases, the enlarged gland has been removed by the knife.

Hernia—Rupture.—This accident consists in protrusion of some portion of the contents of the abdomen through an opening in its wall. There are several varieties, the chief of which are *umbilical, inguinal,*

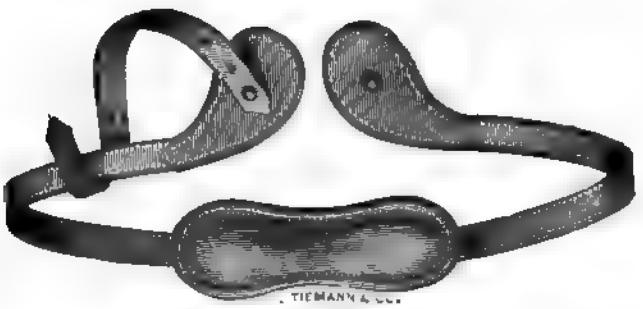

Fig. 499. Truss.

and *femoral.* Hernia may be single or double, as it occurs upon one or both sides. It is often the result of violent straining in lifting, or of straining at stool.

Treatment.—A person who has hernia should never be without a properly fitting truss. Fig. 499. It should be worn constantly, as when the hernia is allowed to come down, it may become strangulated, so that it cannot be returned, and may speedily terminate the life of the patient. When hernia gets down in this way, it can generally, if taken in hand at once, be readily reduced by careful manipulation, termed *taxis.* Taxis should be performed by placing the patient in an easy position, with his limbs flexed so as to take off all strain from the abdominal walls, and then endeavoring to push the protruding bowel back through the opening by means of which it has escaped from the abdominal cavity. A few days ago a case came under our care in which the hernia had been down for several days, and by means of injudicious

manipulation had become very greatly inflamed, so that it was impossible to restore the intestine to the abdominal cavity without a surgical operation, which we accordingly performed, and with the happy result of effecting a cure, as the patient made a good recovery.

Piles, or Hemorrhoids.—These are small tumors which form just within or just external to the anus, from dilatation of the veins of the part. When within the anus, they are known as *internal* hemorrhoids, which, from their tendency to bleed profusely at stool, are known as bleeding piles; and when about the verge of the anus they are known as *external* hemorrhoids. The latter class is generally much the more painful, though otherwise far less serious than the former.

The principal causes of hemorrhoids are constipation of the bowels, violent straining at stool, the use of concentrated food, and obstruction to the portal circulation from pregnancy, or from tumors in the abdomen, or disease of the liver.

Treatment.—As palliative means, the most useful measures are simple unguents in cases of external piles; and in cases of internal piles, the use of warm water or linseed tea enemas before moving the bowels, and a small enema of cold water immediately after. The cool sitz bath, up spray or douche, and other applications to the anus are also useful. Suppositories of various sorts are also useful for the purpose of allaying irritation. The radical cure of the affection is accomplished most certainly by means of the ligature applied by a competent surgeon. Within a few years the country has been canvassed by a horde of "pile doctors," who claim to be able to accomplish a painless cure by means of a secret remedy. The treatment employed by these quacks consists of injections of the tumors with a mixture of oil or glycerine and carbolic acid in varying proportions. The process is successful in most cases, but is not wholly free from danger. We have employed it in a number of cases with success, though in many respects we prefer the older operation.

Fissure of the Anus.—This is an exceedingly painful affection of the anus, consisting of a small, irritable ulcer just within the opening of the anus, which is commonly the result of rupture of the membrane of the part from straining at stool. It is characterized by a peculiar burning, teasing pain which comes on soon after relieving the bowels and is extremely persistent.

Treatment.—The treatment of this condition consists in stretching the anus so as to partially paralyze the muscle, by the contraction

of which the ulcer is kept in an irritable condition and healing prevented. A person suffering with fissure should keep the bowels in a soft condition, if necessary using an enema of linseed tea each time the bowels are moved. Relieving the bowels over a vessel partially full of hot water is one of the best means of relieving the pain of the affection.

500.

Itching of the Anus.—This affection is sometimes so inveterate as to make life almost intolerable. Among its chief causes are dissipation, the use of tea, coffee, tobacco, alcoholic drinks, sedentary habits, piles, worms, various skin diseases, and nervous disorders.

Treatment.—Take a sitz bath at 92° five minutes and 85° ten minutes once a day. After the bath, wash the part well with soap, and apply equal parts of alcohol and water, or apply tincture of iodine or sulphur ointment. If worms are present, give the treatment elsewhere recommended for the same.

Abscess Near the Anus.—This form of abscess is not uncommon. High living, irregular and sedentary habits, straining at stool, and general derangement of the health are all causes which may result in abscess near the rectum. It is a curious fact that this form of abscess shows a great tendency to become chronic and little disposition to heal kindly, often resulting in fistula.

Treatment.—As soon as a painful swelling near the anus is felt, go to bed and apply ice or very cold compresses constantly for twenty-four hours. If the soreness and swelling continue to increase, apply hot fomentations to hasten the process.

Fistula in Ano.—This very troublesome affection usually results from the preceding. It rarely recovers of itself. There is no danger in curing the affection, even when it is of long standing, as a suppression of the discharge does not result in disease of the lungs in persons whose pulmonary organs are weak, as is popularly supposed.

Treatment.—The affection may be palliated by means of frequent cold bathing and wearing a small quantity of oakum pressed against the part, or a sponge squeezed out of a strong solution of permanganate

of potash; but the only radical remedy is division of the tissues with a probe pointed bistoury, Fig. 500.

Ulcer of the Rectum.—This affection is generally located two to four inches above the anus, and is accompanied by symptoms of uneasiness in the rectum, with dull pain in the back between the hips, and "morning diarrhea." From extension, this disease may result in stricture.

Treatment.—The treatment which is at present most highly recommended is confinement in bed, an exclusively milk diet, and in bad cases, division of the ulcer and of the sphincter by a surgical operation.

Stricture of the Rectum.—This affection of the rectum is generally located within two to four inches of the anus. The condition is quite hard to detect, in many cases, especially when beyond the reach of the finger. The treatment of the disease is purely surgical, and consists in dividing the stricture with a knife and then dilating by means of proper instruments.

Prolapsus of the Rectum—Falling of the Bowel.—This is a condition in which the mucous membrane of the rectum or the whole bowel is pressed out by means of straining at stool. It occurs most often in children and in persons suffering with hemorrhoids.

Treatment.—Keep the bowels soft by a relaxing diet and enemas of linseed tea or milk and water. Have the patient relieve the bowels in a horizontal posture, with the hips supported over the edge of a vessel. Drawing the anus to one side by traction with the hand upon the fleshy portion of the hip is a good measure for prevention. Bathing the prolapsed part with cold water several times a day is also a useful measure. If the rectum does not retract of itself at the end of defecation, it should be replaced by pressure with the fingers over a thin cloth smeared with vaseline or some other fine unguent.

Polypus of the Rectum.—The rectum is sometimes the seat of growths of a character similar to those which are found in the nose, as before described. We had a case a few years ago in which we found more than two hundred of different sizes, forming a mass larger than the fist. The patient, a young lady, had been examined by many physicians, and her case had been pronounced by all a hopeless one of cancer of the rectum. Upon a critical examination, we discovered its character, however, and by the proper operation restored her to health after she had been a most pitiful sufferer for many years.

Treatment.—These tumors are very easily cured by tying a ligature about the neck of the tumor. It usually falls off in three or four days. In the case mentioned above we employed both the ligature and the galvano-cautery.

Paralysis of the Rectum. This may be the result of general paralysis or of paraphlegia, or partial paralysis may result from the long continuance of piles. The proper treatment is the daily application of electricity and frequent cold applications

Absence of the Anus. This is a congenital deformity which should always be looked for in young children, as it is possible to remedy the defect by a proper surgical operation

Artificial Anus.—The production of an artificial anus is one of the devices of modern surgery for the relief of permanent stricture, or closure of the natural outlet of the bowels from malignant disease

Use of the Catheter.—The passage of the catheter is in some cases one of the most delicate operations in surgery, but when a gum elas-

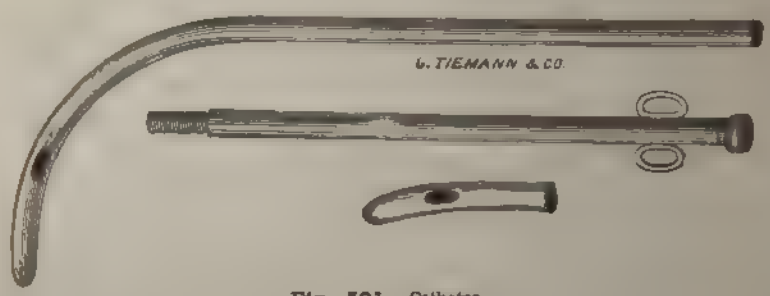

Fig. 501. Catheter.

tic instrument is used, and the instrument is allowed to follow the course of the canal without the application of any very great degree of force, it may generally be accomplished with ease, even by the patient himself. Every person who is at times dependent upon a catheter, should learn the art of using it properly from a skillful surgeon. The passage of the instrument in females is a very simple operation.

Urinary Calculus.—In some cases stony concretions form in the bladder, and attain such a size as to make their removal by a surgical necessary The old operation was by cutting open the base but calculi are now removed by the much less for- crushing with an instrument similar to the one

shown in Fig. 502. The fragments are washed out by means of a stream of water from a powerful rubber bulb.

Extroversion of the Bladder.—This is a deformity in which there is failure of the bladder and abdominal walls to close up in the process of development, so that the inside of the bladder is exposed. The principal inconveniences occasioned are those arising from the constant dribbling of urine upon the adjacent parts of the body, which cannot be wholly prevented by any practical means. The defect has been remedied in a few cases by a surgical operation.

Hypospadias.—In this deformity there is an imperfect development of the urethra, which occasions deformity of the penis as well as inconvenience in urinating. This defect may also be remedied in many cases by a surgical operation.

Stricture of the Urethra.—This is a condition in which the urethra is contracted in some part of its length. Stricture is most often the result of inflammation. Its presence is indicated by difficulty in passing urine or ability to pass but a small, weak stream. Sometimes there are two or more streams which are often curved or spiral. There is also usually dribbling of urine at the close of urination, and more or less discharge from the urethra.

Treatment.—The treatment of stricture can be conducted only by a competent surgeon; but it is a matter of great importance that these cases receive prompt attention.

Varicocele.—This morbid condition consists in a varicose state of the spermatic veins. It is almost always found upon the left side, owing to an anatomical peculiarity of the spermatic vein of that side. It has been supposed to be a result of masturbation and its effects, but is certainly caused otherwise in many cases. It is not infrequently found in these patients, but Prof. Bartholow contends that even in such cases, we should "consider its presence, in general, as accidental." Atrophy of the left testicle is often produced by the pressure of the distended veins.

502.

Treatment.—The inconveniences of the disease may be greatly lessened by wearing a suspensory bag; but the best treat-

ment is an operation by means of which the scrotum is converted into a permanent suspensory bag.

Hydrocele.—This is a dropsy of the testicle. The spermatic cord may also be affected. The tumor usually has a translucent appearance when viewed with a strong light behind it. It differs from hernia in that it cannot be reduced or pressed back into the abdominal cavity, does not diminish during sleep or while lying down, is not increased by coughing, and does not come down from above.

Treatment.—The proper treatment is a surgical operation, which may consist of simply tapping or withdrawing the fluid by an aspirator, or laying open the tumor. A surgeon should be consulted. A suspensory bag will give temporary relief.

Phimosis.—This is a condition in which the prepuce or fore-skin is so tight that it cannot be drawn back over the glands. It is best remedied by the operation of circumcision. In the majority of cases we simply slit up the foreskin to the back side of the glands. In one or two cases we have resorted to the use of an elastic ligature with success.

Paraphimosis.—In this condition the foreskin has been drawn back and has become swollen behind the glands in such a manner as to prevent it from being drawn forward. The condition is sometimes a very painful one, the end of the organ becoming greatly swollen.

Treatment.—Grasp the organ between the first and second fingers of each hand and press steadily against the end of the glands with the ends of the thumbs.

Circumcision.—The fold called the prepuce, has upon its inner surface glands which produce a peculiar secretion. Under certain circumstances, and from inattention to personal cleanliness, this secretion may accumulate, and then often becomes the cause of irritation and serious disease. To prevent such disorders, and to insure cleanliness, the Jewish law required the removal of the prepuce, which constituted the rite of circumcision.

Castration. This operation consists in the removal of the testes It does not at once obliterate the sexual sense, especially if performed after puberty, but of course renders the individual sterile, or incapable of reproduction. Persons on whom it has been performed are called eunuchs.

An analogous operation, termed *spaying*, is performed upon females, consisting in the removal of the ovaries.

GLOSSARY

FOR WORDS NOT FOUND IN THE FOLLOWING LIST, THE READER SHOULD CONSULT THE GENERAL INDEX.

Abnormal, unnatural, unhealthy.
Accoucher, obstetrician.
Amblyopia, degeneration of the optic nerve.
Amœboid, like an amœba.
Amorphous, of irregular form.
Anomalous, contrary to a general rule.
Antidote, something which will counteract the effects of a poison.
Antiseptic, preservative agent.
Antiphlogistic, opposed to fever or inflammation.
Aphthous, affected with aphthæ.
Articulation, the union of two bones.
Ascites, dropsy of the peritoneum.
Asphyxia, suspended animation.
Asthenia, debility, lack of strength.
Atonic, wanting tone.
Auditory, pertaining to the act of hearing.
Autopsy, examination after death.
Axilla, hollow beneath the shoulder.
Bilateral, having two sides.
Blue stone, blue vitriol.
Bolus, a large pill.
Bougie, a long flexible instrument for dilating narrow passages.
Bursa, a sac.
Cachexia, a diseased condition of the nutritive system.
Cachectic, unhealthy.
Calculus, a hard concretion.
Canthus, the angle of the eye.
Capillary, resembling a hair.
Caries, ulceration of bone.
Carpus, the bones forming the wrist.
Catamenia, the menstrual period.
Cautery, a burning or searing.
Cerebral, pertaining to the cerebrum.
Cerebration, cerebral activity, thought.
Cerumen, ear-wax.
Cervix, neck.
Chlonic, convulsion with alternate relaxation.
Cicatricial, scar like.
Climacteric, a critical period of life.
Coagulum, a clot or curd.
Collapse, a sudden failure of the vital force.
Colliquative, relating to discharges producing great exhaustion.
Collyrium, an application to the eye.
Coma, a profound state of sleep, from which it is hard to rouse a person.
Congenital, dating from birth.
Congestion, unnatural accumulation of blood in a part.
Contagion, an agency by which diseases are transmitted.
Contagious, communicable by contact.
Convalescence, the stage of recuperation after illness.
Copperas, green vitriol.
Coryza, nasal catarrh.
Cranium, the skull.
Cretinism, a state of idiocy accompanied by goitre.
Crisis, the turning point.

Cuticle, the outside skin.
Cutis, the "true skin."
Decussate, to cross.
Demulcent, a substance of bland, soothing nature.
Depletion, lessening of vitality or activity.
Dermatologist, a specialist in skin diseases.
Dessicated, dried.
Diagnosis, the discrimination of disease.
Diaphoretic, a remedy which will induce perspiration.
Diathesis, constitutional affection or tendency.
Diuresis, an increased secretion of urine.
Diuretic, a medicine which will increase the secretion of urine.
Dorsal, pertaining to the back.
Dorsum, the back.
Dysuria, difficult urination.
Ecchymosis, a discolored spot, the effect of a bruise or rupture.
Effusion, the escape of fluid out of its natural vessel into another part.
Electrotherapy, treatment of disease by electricity.
Emmenagogue, a remedy that promotes the menstrual flow.
Endemic, a disease arising from some peculiarity of situation or locality.
Entozoa, internal parasites, worms.
Ephemera, fever of short duration.
Epidemic, a disease attacking at the same time a number of individuals, supposed to be caused by some peculiar condition of the atmosphere.
Epigastrium, pit of the stomach.
Epistaxis, nosebleed.
Erotic, passionate, sensual.
Empiricism, quackery.
Erethism, irritation, excitement.
Etiology, that department of medical science which treats of the causes of disease.
Excoriated, raw, deprived of skin.
Expectant Medication, a method in which the patient is left almost wholly to the efforts of nature.
Extravasation, escape of fluid into the tissues.
Exudation, oozing of fluid through the pores of a membrane or skin.
Fascia, the thin, tendinous covering of muscles.
Fauces, the posterior portion of the mouth.
Febrile, feverish.
Fluor albus, whites, leucorrhœa.
Fœces, excrement, natural discharge from the bowels.
Follicle, a gland in a membrane.
Fomites, substances supposed to retain disease germs.
Fontanel, soft spot on head of infant.
Foramen, a cavity.
Fungus, a morbid growth.
Galactorrhœa, excessive secretion of milk.
Ganglion, a collection of nerve cells.
Gangrene, mortification.
Gastric, pertaining to the stomach.
Globus hystericus, sensation of a lump in the throat.
Glottis, the openings between the vocal cords.
Grumous, clotted.
Gynecologist, a specialist in diseases of women.
Hemicrania, a pain affecting but one side of the head.
Hepatic, pertaining to the liver.
Homologous, similar in structure.
Hydatid, a tumor containing transparent fluid.
Hydropathy, the science of the use of water as a remedial agent.
Hydriatics, hydrotherapy.
Hyperæsthesia, unnatural sensibility.
Hypertrophy, over-growth.
Hypnotic, a remedy which induces sleep.
Hypodermic, under the skin.

Hydrotherapy, hydropathy.
Idiopathic, a primary disease.
Idiosyncracy, a peculiarity of constitution.
Inanition, exhaustion from want of nourishment.
Incubation, the period between the exposure to a contagious disease and the attack resulting from it.
Infection, contagion.
Inguinal, pertaining to the groins.
Insomnia, absence of sleep.
Intermittent, a disease which subsides at certain intervals.
Labia, lip.
Lactation, the period of milk secretion.
Lamina, a thin plate or scale.
Lateral, pertaining to the side.
Lesion, an injury of structure.
Lethargy, unnatural sleepiness.
Lithotomy, the operation for stone in the bladder.
Lobe, a round projecting division of an organ.
Lumbar, pertaining to the loins.
Lymph, fluid of the lymphatics.
Maceration, soaking.
Materia medica, science of medicine.
Menstruum, fluid medium.
Metamorphosis, complete change of form.
Metastasis, a change in the seat of disease.
Moribund, dying.
Narcotism, narcotic poisoning.
Nates, buttocks.
Nephritic, pertaining to the kidneys.
Neurosis, disease of the nerves.
Node, a protuberance.
Normal, natural.
Nostrum, patent medicine.
Nuchæ, nape of the neck.
Occiput, back part of the head.
Œdematous, dropsical swelling which pits on pressure.
Oil of vitriol, sulphuric acid.
Olfactory, pertaining to the sense of smell.
Opthalmic, pertaining to the eye.
Osmosis circulation of fluids through moist membranes.
Ossification of bone, formation of bone.
Ovariotomy, the operation of removing the ovary.
Ovum, egg, female element of generation.
Panacea, a universal remedy.
Paracentesis, the operation of tapping to evacuate fluid in dropsy.
Paralysis, loss of sensation or power of motion.
Parietes, inclosing walls.
Paroxysm, a sudden violent action.
Pathology, the science of diseases.
Pathognomonic, characteristic.
Pectoral, relating to the breast.
Pedicle, the stalk, or neck.
Pediluvium, a bath for the feet.
Pellicle, a thin skin or membrane.
Petechiæ, small spots in shape and color resembling flea-bites.
Pharynx, upper portion of the throat.
Phlebitis, inflammation of the inner membrane of a vein.
Phlebotomy, blood letting.
Phlegmasia-dolens, milk-leg.
Pitting, indentation produced by pressure with the finger.
Plethora, a condition in which there is a superabundance of blood.
Pleurodynia, pain in the chest.
Plexus, a net-work of vessels or nerves.
Polypus, a variety of tumor.
Post-mortem, after death.
Primæ viæ, the alimentary canal.
Process, a prominence on a bone.
Prognosis, a judgment respecting the progress or result of a disease.
Prolapsus, falling.
Prophylactic, a preservative remedy.
Pruritus, itching.
Pseudo, spurious.

Psychology, science of the mind.
Ptyalism, an excessive secretion of saliva.
Puerperal, pertaining to childbirth.
Pulmonary, pertaining to the lungs.
Pyrexia, condition of normal heat.
Regurgitation, the rising of fluids into the mouth.
Remittent, abating periodically in severity.
Rigor, sensation of cold with shivering.
Spectroscope, an instrument used in spectrum analysis.
Soporific, productive of sleep.
Sedatives, medicines which depress the vital forces.
Senile, relating to old age.
Sensorium, the common center of sensations.
Sequelæ, morbid conditions sometimes left by an acute disease.
Serum, a component of the blood.
Sialagogues, remedies which increase the secretion of saliva.
Slough, to come off; mortification.
Sopor, deep sleep.
Sphincter, a circular muscle.
Sputum, matter expectorated.
Sporadic, a disease which arises from an accidental cause.
Stertor, snoring breathing.
Strangulation, a stoppage of the circulation by compression.
Stupor, unconsciousness.
Subcutaneous, underneath the skin.
Sudorific, a medicine which induces perspiration.
Synchronous, simultaneous.
Syncope, fainting.
Tenesmus, constant desire to evacute the bowels.
Traumatic, pertaining to a wound.
Trismus, partial lockjaw.
Therapeutics, that branch of medical science which considers the treatment of disease.
Vasomotor, pertaining to the motion of the blood in the vessels.
Velum, a veil.
Ventral, abdominal.
Vesication, formation of blisters.
Virus, poison.
Viscus, any internal organ.
Viscera, plural of viscus.
Vivisection, dissection during life.
Volition, will.
Vomica, an abscess in the lungs.

WORKS QUOTED, AND AUTHORITIES CONSULTED IN THE PREPARATION OF THIS WORK.

ACTON.—The Reproductive Organs.
AGNEW.—Lacerations of the Female Perinæum and Vesico-Vaginal Fistula.
ALLINGHAM.—Diseases of the Rectum.
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AMES.—Sex in Industry.
Annual Reports of the American Public Health Association.
Annual Reports of the Michigan State Board of Health.
ARTHUR.—Prevention of Decay of the Teeth.
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" Nutrition in Health and Disease.
" Clinical Lectures on the Principles and Practice of Medicine.
BERNSTEIN.—Five Senses of Man.
BIRCH.—Constipated Bowels.
BIGELOW.—Rational Medicine.
" Modern Inquiries.
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BILLING.—First Principles of Medicine.
BLACK.—Renal and Urinary Organs.
" The Ten Laws of Health.
BLASERNA.—Theory of Sound.
BLOXAM.—Organic and Inorganic Chemistry.
BODENHAMER.—Rectal Medication.
" Anal Fissure.
" Physical Exploration of the Rectum.
BOWMAN.—Medical Chemistry.
BRINTON.—Diseases of the Stomach.
BUCK.—Hygiene and Public Health.
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BURETT.—Hearing and How to Keep It.
BYRNE.—Electro-Cautery in Uterine Surgery.

CAMERON.—Manual of Hygiene.
" Chemistry of Food.
CARPENTER.—Mental Physiology.
" The Microscope and its Revelations.
CHAMBERS.—Indigestion.
" Restorative Medicine.
" Lectures on Renewal of Life.
" Manual of Diet.
CHAPMAN.—Diseases and Displacements of the Uterus.
CLARKE.—Manual of Surgery.
CLYMER.—Williams' Principles of Medicine.
COMBE.—Digestion and Dietetics.
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" Inhalations, Therapeutics, and Practice.
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" Loss of Weight, Blood-Spitting, and Lung Disease.
DONVILLE.—A Manual for Nurses.
DUCHENNE.—Treatise on Localized Electrization.
DUGDALE.—The Jukes.
DUNCAN.—Fecundity, Fertility, and Sterility.
DURANT.—Horse-Back Riding.

EASSIE.—Sanitary Arrangements for Dwellings.
ECKER.—Cerebral Convolutions of Man.
ELAM.—A Physician's Problems.
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FIEVER.—Electricity for Nervous Diseases.
FIGUIER.—The Vegetable World.
FLINT.—Phthisis.
" Practice of Medicine.
" The Respiratory Organs.
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FORBES.—Nature and Art in Disease.
FOSTER.—A Text-Book of Physiology.
FOTHERGILL.—The Maintenance of Health.
" Hand-Book of Treatment.
FOX.—Skin Diseases.
" Epitome of Skin Diseases.
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FRERICHS.—Diseases of the Liver.

GARLAND.—Pneumono-Dynamics.
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KINGSLEY.—Health and Education.
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NIEMEYER.—Text-Book of Practical Medicine.
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OSGOOD.—Winter and its Dangers.
OTT.—Action of Medicine.

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" Index of Diseases and their Treatment.
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Transactions of the American Gynecological Society.
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VAUGHN.—Chemical Physiology and Pathology.
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" Diseases of the Eye.
WILSON.—Hand-Book of Hygiene.
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